Scientific American.

THE ADVOCATE OF INDUSTRY, AND JOURNAL OF SCIENTIFIC, MECHANICAL AND OTHER IMPROVEMENTS.

VOLUME 5.] NEW YORK MARCH 30, 1850. [NUMBER 28.

THE
Scientific American,
CIRCULATION 14,000.
PUBLISHED WEEKLY.
At 128 Fulton Street, New York, (Sun Building,) and 13 Court Street, Boston, Mass.
BY MUNN & COMPANY.
The Principal Office being at New York.
Barlow & Payne, Agents, 89 Chancery Lane, London
Geo. Dexter & Bro., New York City.
Stokes & Bro., Philadelphia.
R. Morris & Co., Southern.
Responsible Agents may also be found in all the principal cities and towns in the United States.

TERMS--$2 a year--$1 in advance, and the remainder in 6 months.

Rail Road News.

Alabama Railroad.

Mr. Editor—Our Railroad from here to the Tennessee River is commenced under the most flattering auspices. Mr. Lapsley, the president, is a practical business man, and nothing heretofore undertaken by him has failed of success. The South Western, Va., Railroad, from Lynchburg to Knoxville, Tenn., is in progress. It will some day communicate with ours, and will then be the great route from North to South. J. H.

Selma, Ala.

Railway Injunction.

Judge Caldwell, of the Ohio Supreme Court, granted injuctions against the Cincinnati, Hamilton, and Dayton Railroad, on the applications of the Spring Grove Cemetery, and of Platt Evans, to be operative when they shall give bond and security in each case, in the penal sum of $5,000, conditioned to pay the damages to result from interrupting the work on the road, if the Company's right shall be finally established.

Charleston and Memphis Railroad.

Great exertions are making to build this extensive work, more than one-half of the distance is already finished. The cars are running from Charleston to Rome, in the North Western county of Georgia. There are pieces of the road through Alabama, along the Tennessee river, also in actual operation—so that to unite Memphis and Charleston is not such a gigantic undertaking as it appears at first sight.

Passengers may now go from Pittsburgh to Philadelphia in fifty hours, without *staging* at all—taking the railroad at Jackstown. So says the Pittsburgh Mercury.

An Iron Railroad Bridge has just been thrown across the Savannah River, near Charlottesville, Virginia. It is to be tested by running a train over it of 120 tons.

The Railroad fare between Albany and Buffalo is to be reduced to $8.

A Horse's Opinion of a Plank Road.

The North Carolinian tells the the following anecdote of an old farmer of that region, who had tried the plankroad:

He was at first much opposed to the plankroad, and thought it would be a waste of money to build it. But he came to Fayetteville with his wagon and produce, and drove on it some miles. When he got back to Chatham, our merchant freind asked him if had seen the plankroad. "Yes," he said, "he had seen it."

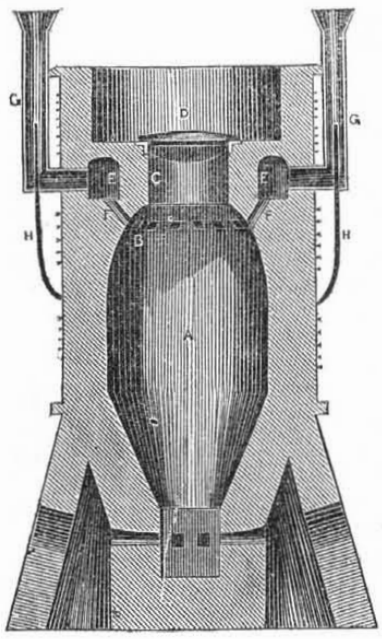
"Well, did you drive onit?" "Yes." "Well, don't you think you can carry four times as much weight on it, with your four-horse team, as on a common road?" "Oh, yes," says he, "it is first rate; and is a fact that when the wagon got to the end of the planks and struck the heavy dirt road, every horse stopped and looked round."

The best American Apples sell in England at 6 cents a piece.

IMPROVEMENT IN THE MANUFACTURE OF IRON.

Figure 1.

Figure 2.



This is an invention recently patented in England, by Benjamin Thompson, Civil Engineer, at New-Castle-upon-Tyne, and first noticed in our superlative exchange, the London Patent Journal and Inventors' Magazine. The nature of the invention consists of two parts. First, the construction and working of the furnace. Second, the application of the gases generated in the furnace to subsequent useful purposes. Figure 1 is an elevation of the furnace. Figure 2 is a vertical section.

The same letters refer to like parts.

The body, A, of the furnace, is constructed somewhat in the ordinary manner; the top of it, at B, is of a dome shape, and surmounted by a throat, C, the upper end of which can be closed by the iron plate, D, which is intended to fit as air-tight as practicable, and when removed, it is through this aperture that the furnace is charged. Above the dome, B, and around the throat, C, is the circular tunnel or chamber, E, E; it communicates by the apertures or short flues, F F, with the body of the furnace in the upper part of the dome; from this tunnel, upon opposite sides of the furnace, proceed the vertical pipes, G G, these are intended to carry off the gasses; H H, are two steam pipes; their lower ends communicate with a steam boiler behind the furnace, from which the steam is supplied; the steam pipes, H H, pass upwards into the centre of the vertical pipes, G G, and their ends terminate in a number of steam jets, arranged so as to produce the best effects of exhaustion; the tuyers are arranged in the usual manner and intended to supply air to the furnace by draught, either in a cold or hot state. The exhaust pipes, G G, are about eighteen inches in diameter, and the diameter of the steam pipes is about four inches. The steam jets being in action, they cause an exhausting action in the pipes, G G, thereby drawing the gases generated in the furnace through the short flues, F F, and tunnel, E, and effecting the necessary working of the furnace. The lid, D, is lifted from its seat occasionally, for the purpose of charging the furnace, but this is to be done as seldom as possible, as at these times the exhausting action of the steam jets is to be stopped, and the consequent working of the furnace suspended. This method, therefore, is to do away with the blower, and use exhaust by steam as a substitute.

The second improvement is, the employing the gases generated in the furnace, in the above described operation, to subsequent useful purposes, as heating the refinery and other furnaces, or generating steam in steam boilers; to effect this, the vertical pipes, G G, are dispensed with, and the gases generated are carried by a pipe from the tunnel, E, to the furnace where they are to be employed. The steam jets or other exhausting means are then employed in the exit or chimney from this furnace, instead of the smelting furnace, as above.

Autographs.

The following article from Munsell's Typographical Miscellany is worthy of a place at the side of ten thousand of inkbottles:

A fruitful source of perplexity to the printer, and indeed to every body else, is obscure manner in which many persons write their names. A proper name is the most difficult thing in the world to decypher if badly written. A common word in a paragraph may be known generally from its necessary connection with the rest of the sentence in which it stands.—But there is no such help in this case. It often happens that business men receive orders which they cannot respond to for this reason, and instances are numerous of goods being lost where they were consigned to names so obscurely written to an order as to be mistaken. A most remarkable instance of fair autographs, considering the number, are those attached to the Declaration of Independence of the United States. It is seldom so many occur in a single document, in which so few unreadable ones appear. Scarcely any thing can be more important than an unmistakeable signature. Was there ever a specimen to surpass that of John Hancock on the document above referred to! It stands there to challenge the admiration of the world in all coming time. In the autographs of public men, not excepting those of bank officers appended to bills, we frequently meet with such as are utterly unreadable.—They should seem to have been written for puzzels, and they serve that purpose most effectually. It has been our lot to meet with more than one which did not contain a single character resembling a letter of the English alphabet. If they were written in crotchets with a view to defy the skill of the counterfeiter, the idea was a mistaken one, for they subserve no such end, a plain, bold, manly handwriting much more embarrasses attempts at fraud.

Useful Receipts.

To Decompose old Tan.

Make an admixture of three bushels of shell lime, hot from the kiln, with one bushel of salt, previously dissolved in water, the caustic lime will decompose the salt, combining with the chlorine, and forming chloride of lime; thus setting free the soda, which combines with carbonic acid from the atmosphere, and forms carbonate of soda. Both chloride of lime and carbonate of soda are capable of decomposing woody fibre or other organic matter better than lime, they do not drive out the ammonia, and are therefore preferable to lime. The mixture should be turned every other day for ten days and then mixed with the tan, at the rate of four bushels per cord, and in four months it will be fully decomposed.

Estimated Value of Urine as a Manure.

Professor Rodgers, in his excellent work on "Scientific Agriculture," has the following estimate of the value of urine as a manure, which we belive to be a very near approximation to the truth:

If we allow the quanity of urine voided by each individual to be 600 pounds yearly, the city of Rochester, which contains 20,000 inhabitants, would funish yearly about 240 tons.—This estimate, at the price of guano, would be worth $21,600. Now, if we estimate the number of horses and cows of the city to be 500 each, and that each animal voids as much urine as two persons, the amount would be 80,000 pounds, or 40 tons, which would be worth $1600. Here then is a loss, if we reckon guano at $40 per ton, of $23,200, or of manure enough to produce, in addition to the ordinary crop, over 16,000 bushels of wheat in a single year.—[Gen. Far.

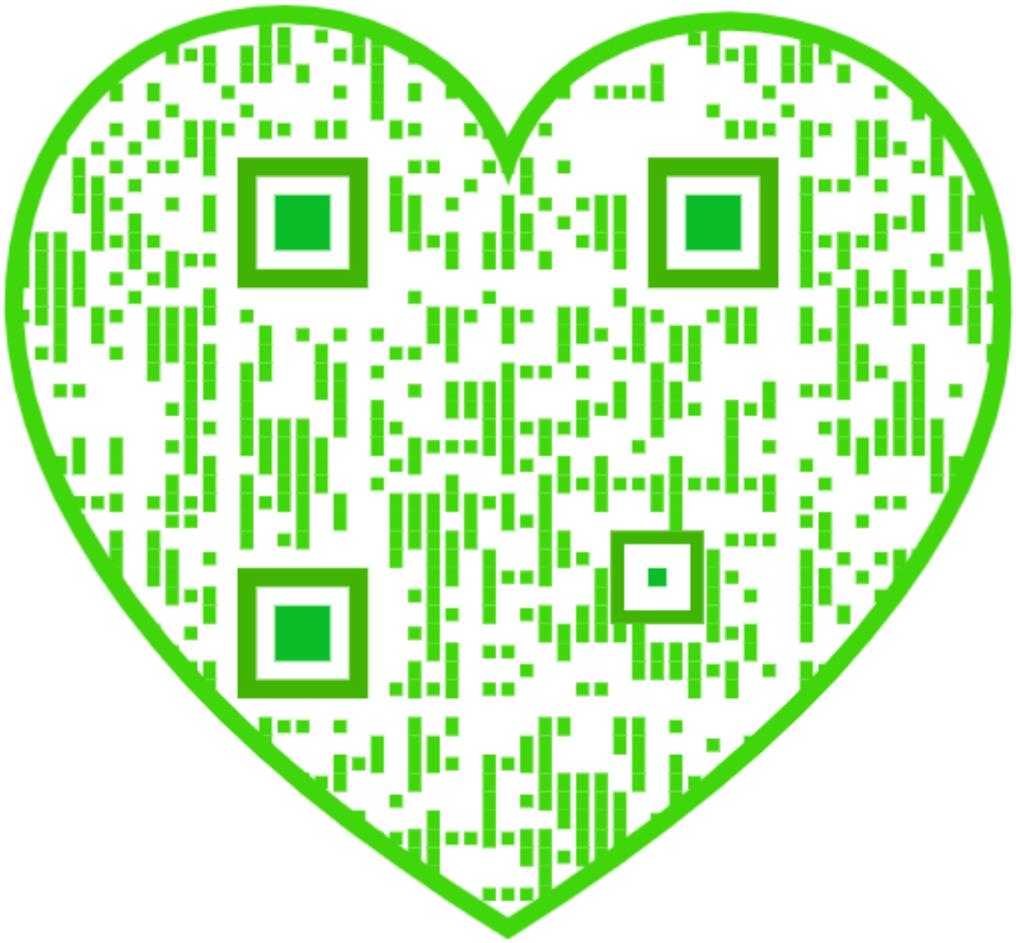
[Practically, the value of urine has been known for a century, and employed mixed with water for cabbages, both by the Dutch and Scotch raisers of cabbages. It is not long since the value of cabbage, as a strongly nitrogenized vegetable was discovered, but this might have been inferred from its healthy growth when fed with nitrogenized agents, such as urine, or ammonia in any form.

Heathen Temple in Seringham.

Of this edifice Dr. Alexander Duff, a Scotch Missionary of great accuracy, says, "It is a mile square, and in the centre of each side is a tower of gigantic height; the lowest pillars of which are single pieces of stone, forty feet long and five feet square; reminding the spectator of the stones of Solomon's temple. Within the outer square are six others, three hundred feet distant from each other, and between them are numerous halls. The roof is supported by one thousand pillars, each of one solid block of stone, very finely carved with figures of the gods, and other devices. Siva, the god of the place, is formed entirely of gold in solid pieces, the entire height of the statue being fifteen feet. The platform also on which the god rests is of gold. All his ornaments are in proportion to his size. The quantity of emeralds, pearls, and other precious stones which adorn him is immense. No jeweller's shop in London could exhibit anything like it. The whole gives an idea of the immense power of Brahminism in former days, grinding down the people, and turning all their wealth towards themselves.

Mr. R. A. E. Meyer, aged 27, a native of Hanover, stabbed himself in this city. He was an architect by profession and of uncommon ability, he having been the superintendant of all the telegraphic lines in Prussia.

© 1850 SCIENTIFIC AMERICAN, INC



Miscellaneous.

Correspondence of the Scientific American.

WASHINGTON CITY, March 26, 1850.

From the debate in the House on the Appropriation Bill, you will perceive that in the affair of the Patent Office building, might has overcome right, and $92,000 are to be taken from the Patent Fund to provide room for the Home Department. The ingenious mechanics of the country, through whose brains this money has flowed into the Treasury, will be indignant at such an act of injustice. But if the surplus Patent Fund is to be thus seized, ought not the fees to our own citizens to be reduced, so that there shall hereafter be no surplus? If we are to overcharge patentees, and erect our public buildings with the surplus, we shall be a century behind the age. When the bill comes up in the Senate, I hear that an attempt will be made in that body to set the matter right.

It is not contemplated that the proposed alterations of the Capitol shall be commenced until after the close of the next short session. An addition of 150 feet will be made to each chamber. If the country shall continue to increase at the present rate, in the course of half a century we shall have a Delegation from the North Pole knocking for admittance.

There are now five memorials before the Post Office Committee of the Senate, from parties asking aid for the establishment of a Telegraphic communication with Europe via Behrings Straits.

The U. S. Supreme Court meets again next Monday, when the decision on the Wheeling Bridge case will be read.

Judson's Patent Steam Governor has been ordered for several printing offices in this city. It is in high repute and is much superior to the ball governing apparatus now commonly used.

There are several scientific monomaniacs still remaining here, to the great annoyance of members of Congress and the Heads of Departments. A few days ago a respectably dressed man, one of this class, forced his way into the private room of the Secretary of the Navy,, having, as he alledged, business of the highest importance. He unfolded to the view of the amazed Secretary, several sheets of paper, containing plans of a terrific machine, to be called the "Exterminator," which the man declared would uproot and exterminate any island on the face of the globe in a very short period. The armament of the Exterminator was to be 1200 guns and as many scrapers, which, worked by powerful machinery, were to scrape away the earth with fearful velocity. Mr. Preston at last got rid of the fellow by referring him to the Chief Engineer, Mr. Haswell, who in turn, referred him to the youths in his office. They pretended to take the matter into grave consideration, and promised to make a report on the subject at an early day. Some of these gentry are so much dreaded that I have known members of Congress subscribe to the stock for building models, as the only way of securing peace.

In the course of a week, I presume, we shall have an official report from the Committee appointed to investigate the causes of the accident at the Smithsonian building. Their report will cover the whole edifice, and from it we shall learn whether the architect or the mechanics are in fault.

Mr. T. B. King's official report on California, which contains a great amount of highly interesting scientific information, will be sent to Congress in a day or two.

Congress has made no further progress in the Woodworth Patent affair, but the lobby members are working like bees.

A person named Rufus Porter is here, endeavering to form an Ærial Navigation Company, the stock to consist of 1500 shares at $10 per share. The funds when raised are to be applied to the construction of an ærial ship capable of containing 150 passengers, and which, Mr. Porter says, will easily carry them to California or London in 3 or 4 days. He proposes to call for an installment of one dollar only per share, until after a machine has been built capable of carrying three persons, and a journey has been made to Baltimore and back again, thereby demonstrating the feasibility of the plan. He says that several hundreds of persons have already bespoken passage. The prospectus, blanks and scrip for the proposed company are being printed by Mr. Greer. Among other advantages, Mr. Porter includes that of transporting soldiers for the Government in time of war. Only think of the astonishment of an enemy quietly encamped in the soft moonlight, having in the twinkling of an eye a whole regiment of Uncle Sam's Invincibles dropped upon them from a squadron of Porter's ships! But in process of time our enemies will have them also, so that hereafter contending squadrons must meet in mid air, while the peaceable portion of mankind can rest quietly below. Verily there are stirring times ahead. *

Miscellany of Foreign News.

By the last arrival from Europe, although our papers could see "no important news," we perceive that one of the most important motions ever brought before the British Parliament, was defeated by a majority of 150. The motion was introduced by old Joseph Hume, for leave to bring in a Bill to extend the elective franchise to household voters.

There has been very severe cold in Turkey, 150 persons were frozen to death within a few days, some in their houses and some on shipboard. The cold was severe there, but it would be moderate weather here.

The Railways in Russia are progressing rapidly, and when completed they will have the effect of cheapening grain in the Western markets of Europe.

Prof. Munch, of Copenhagen, the celebrated Dane, has discovered a rare manuscript in Latin, on a recent visit to the Orkney Islands, in Scotland. It is as old as the ninth century.

The screw steamship "City of Glasgow," is to leave that city on the 16th of April. She is 1,610 tons burden, with engines of 350 horse power. She is to be commanded by Captain Matthews, formerly of the Great Western.—Cabin passage to New York is £20; second cabin £12.

It is expected that Lady Franklin will soon visit the United States.

Dr. Dick has got a donation of 50 guineas $250) from a Society in London. The worthy Doctor is greatly respected everywhere.

The Europa beat the Hermann five days on the passage across from this port. Mr. Collins must show us something better than we can yet boast of. It pained us when they started, to see the imprudent comments about the race, before it was commenced. Well, we will yet learn to run as fast as the best of them.

Ravages of Insects.

A letter in the New Orleans Picayune states that many of the public records of Louisiana have been materially damaged, and, rendered perfectly useless in cases of reference, by the ravages of a small insect, the same as that described by Humboldt and others travellers in South America and Mexico. The Recorder of the Parish of Carroll, La., writes that the entire acts of 1837, 1838, 1839, and up to 1841, are destroyed.

Canary Birds of No Value, Legally.

In the muncipal court, lately, a lad named Michael O'Keefe was tried for the theft of three canary birds, and acquitted, the court instructing the jury that canary birds, according to the common law, were not of any value, and consequently not a subject of larceny.—[Boston Traveller.

[We wonder where the judge of the above court studied common law. If the paragraph is true, we must say the decision was a very unjust one.

The Wonderful Scalp Story.

We perceive the old story of the eight packages of scalps found after the surrender of Burgoyne, is going the rounds of the papers again, with great outbursts of editorial comment. It would be well if some of our editors were better historians.

General Taylor's plantation has been submerged—that is, his Natchez one—he has another, however.

Wire Suspension Bridge.

The wire suspension bridge erected across the Cumberland river at Nashville, will be entirely completed during the month of May next. The Nashville Whig says:

The length of the bridge is 656 feet, and the whole length of the bridge and embankment 1956 feet. Width of superstructure 28 feet—carriage way 20; two footways, each 4 feet.—The bridge will span the Cumberland opposite the southeast corner of the public square of the city, at an elevation of 110 feet above low water, over the main steamboat channel.—Base of pier 60 by 20 feet, solid mason work; anchorage 60 by 56 on the north side; solid limestone cliff on the south side. There are to be 16 cables, each cable composed of 200 strands of No. 10 wire each wire tested to bear 1500 lbs. The whole work is calculated to bear a weight of 4,800,000 lbs. or 2,400 tons. The cost of this magnificient structure is estimated at but $100,000, though the Wheeling Bridge, 1,010 feet long, cost $225,000.

Great Invention in Engineering.

The Cincinnati Times says that Mr. Sellers, of that city, formerly of Philadelphia, and known as one of the most ingenious mechanics in the United States, has just completed an invention which it is said, will simplify and revolutionize the whole science of engineering.—Mr. Sellers submitted his machine to the inspection of Dr. Locke, T. W. Bakewell, Mr. Rickey, and other scientific gentlemen, all of whom approve of it, and consider it a great triumph of mechanical skill. The machine, the Times learns, combines the operation of the perambulator with that of the pentagraph, giving profile lines of plats, surveys, and measuring distances. By trundling it over a track of country, a more accurate survey for a railroad can be made than by any other method; and at least fifteen miles per day mapped with correctness—altitudes, depressions and space. It can also be used on our streets, thus dispensing with the services of an engineer.

Railroad in Chili.

Mr. Allen Campbell, C.E., of Albany N. Y., has been chosen by the goverment of Chili, to construct a railroad from Caldera to the Pacific, a distance of 55 miles. The whole elevation to be overcome does not exceed eleven hundred feet, of which all but four or five miles of fifty feet to the mile are of moderate grades. The great buisness of this road will be to transport copper and copper ores from the mines near Copiapo, which are among the richest in the world—coal for smelting purposes will be an important item, as also provision for the mining region.

Robert Fulton.

A Fulton Monument Association has been formed at Troy, Indiana, for the purpose of collecting funds to erect upon some bold promontory on the Lower Ohio, a monument to the memory of the father of Steam Navigation.—Fulton rests on the banks of the Ohio, as he wished; and the noise of the passing steamboats has become his lullaby far beyond his most sanguine hopes.—[Phila. Gazette.

This must be a mistake. John Fitch, not Robert Fulton, sleeps on the banks of the Ohio.

Wonderful Locomotive.

We are informed that there will shortly be brought before the public, a new locomotive, in which the requirements of either steam, fire, air or water will be dispensed with; its power of traction, while effective, will be perfectly safe—by it one half at least of present working expenses will be saved. Advocates of universal peace look forward with hope; this agent will exert a powerful influence on all nations. Distant parts of the world, where steamships, from the expense of fuel, have not been, will soon be reached with facility. This motive power will advance all nations by a larger stride than ever steam has yet made.—[London Mining Journal.]

[We will await with no small amount of impatience, the debut of the above invention. The Californian balloon is nothing to it.]

President Taylor handled Reynold's self-sharpening plow last Monday, at Washington, and beat all competitors.

Works on Science and Art.

ANNUAL OF SCIENTIFIC DISCOVERY.—This is a very neat volume, edited by David A. Wells of the St Lawrence Scientific School, Cambridge, and by Geo. Bliss, Jr.: for sale by L. Colby, No. 122 Nassau street, New York. This is a neat volume and a useful one. It is a collection of yearly facts relating to Mechanics, Useful Arts, Matural Philosophy, Chemistry, &c. It is adorned with a likeness of L. Agassiz, the eminent Naturalist, and pupil of the celebrated Baron Cuvier. This is a work which we have had in our mind's eye for some years, after the manner of *Timbs*. We are happy to see such a work published in our country, and so well edited—may we be cheered with the smiles of its countenance every year. It contains a number of extracts from the Scientific American. Such a book has long been wanted in America. It should receive a wide-spread patronage.

ENCYCLOPEDIA OF CHEMISTRY.—This splendid work presenting a complete and extended view of the present state of Chemical science, edited by Jas. Booth, Professor of Chemistry, and Campbell Morfitt, author of "Applied Chemistry" is now completed. It is a work which must and should find a place in every library. A work arranged alphabetically, upon any branch of science, is always to be preferred, because the reference is easy and there is no confusion in the arrangement. The old Chemical Dictionary of Dr. Ure, is now obsolete, owing to the astonishing progress of Chemical discovery, within a few years. This work is wrote up to the present time—embracing descriptions of the latest discoveries.

Bayne's Panorama.

We paid a visit a few evenings since to Bayne's Panorama of a voyage to Europe, together with the most interesting portion of the celebrated river Rhine. We can truly say that it was an evening well spent. The truthful illustrations of what we have often read, seems to impress the memory stronger than even books can do, for the most attentive student. As a work of art it has no superior, and we trust the proprietor will be well rewarded for the time and expense which he has bestowed upon the work. An entertainment of this character is of absolute advantage. The same cannot be said of all which exist in cities and float about the country.

Camera Lucida.

The demand for these useful instruments for teaching the inexperienced the art of draughting has been so great for the past few weeks th our supply of them has become quite exhausted. Those who have ordered Cameras and not received them, are informed that we have a large lot in the hands of our manufacturers, which will be completed in about 10 days, when their orders will be promptly filled.

Back Volumes Scientific American.

We have remaining a few more copies, Volume 4 bound, for $2,75; but of previous Volumes, no *complete*, sets either bound or in sheets. Of Vols. 3 and 4 we can furnish sets of about 40 numbers each (not consecutive,) for one dollar per set; of Vols. 2 and 3, sets of about 50 Nos. (containing both Vols.) at the same price (one dollar). We have parcels done up ready for mailing of all the different Vols. referred to above, and on receipt of $1, either of the sets ordered will be immedially forwarded by mail.

Western Journal.

We are in the regular receipt of this able magazine; devoted to Agriculture, Manufacture, Mechanics, &c. Its motto is "Agriculture and the Mechanic Arts are the basis of civilization." It is published by Tarver & Risk, of St. Louis, monthly.

Marrying a Deceased Wife's Sister.

The bill, in the British Parliament, to permit the husband to marry with his deceased wife's sister, has been carried through a second reading by a majority of 52; there being ayes 182, nays 130.

Hail stones of from 6 to 11 inches in circumference, fell at Madison, Ind., on the 17th inst.

© 1850 SCIENTIFIC AMERICAN, INC

Phenomenon of Molten Metals.

Mr. Boutigny, the French *savan*, who has pursued with great perseverance after the phenomenon of water in a spheriodal state, has lately published some very singular statements apparently new to some, but not in a degree to anybody whatever. The following extracts of his are from a French Journal.

"In the year 241, Sapor or Chapour ordered the Magi to do all in their power to persuade them and bring them back to the faith of their ancestors. It was then that one of the pontiffs of the dominant religion, Adarabad-Mabrasphand, offered to submit to the fiery ordeal. . . . . 'He proposed that eighteen pounds of melted copper, issuing from the furnace, all hot, should be poured on his naked body, on condition that if he was not injured by it, the unbelievers should yield to so great a miracle. The trial was said to be attended with such success, that they were all converted.' The historian adds, with an air of doubt, certainly allowable in such a matter, 'We see that the religion of Zoroaster had also its miracles and its legends.'

Now this fiery ordeal, undergone with such success by Adurabad-Mabrasphand, is in plain truth an experiment of primitive facility and simplicity, and which is any but miraculous.

I stop here for an instant, for I fancy that I see the smile of incredulity rise on the lips of some who do me the honor of listening to me —that smile, so discouraging to one who is insincere, but which only heightens the ardor of him who intends to practice no deception, and who does all in his power not to deceive himself.

To such persons, then I would offer this encouragement; the little that I have still to relate appears improbable, but it is true, and that is enough. Having said this, I continue.

In France, in England in Italy, wherever I have had occasion to speak of bodies in the spheroidal state, I have met with persons who have put to me this question; May there not be some connection between these phenomena and that presented by men who run barefooted over liquid metal (?) still incandescent, or who plunge their hand into molten lead, &c. ? To all I have answered, Yes, I believe that there is an intimate relation between all these facts and the spheroidal state. And then, in my turn, I put this question; Have you witnessed the fact which you tell me ? And the answer has invariably been in the negative.

I avow that all these *on dits* and the marvelous legends which I had read in various works on the fiery ordeal and incombustible men, admitted without reserve by some, obstinately denied by others, excited my curiosity greatly, and gave me a strong desire to verify all these phenomena, and to recall them to the recollection of cotemporary observers, for alas! all this is as old as the world; *nil sub sole novum.*

I wrote first to my friend, Dr. Roche, who passes his life in the midst of the blast furnaces of the Eure, and who is the physician of a portion of the Cyclopean population who feed them. I requested of him precise particulars. All that he could ascertain was, that a man named La Forge, of from thirty-five to thirty-six years of age very corpulent, walked step by step barefooted on the pigs after the casting: but he had not seen this. This was not enough to dispel my doubts.

I then applied to a foundery at Paris, where I was laughed at and shown the door. I retired, hanging down my ears, thinking over the difficulties of verifying a single fact, and such a simple one.

Subsequently I was fortunate enough to meet with M. Alph. Michel, who lives in the midst of the forges of Franche-Comte. M. Michel promised me, with the greatest kindness, to inquire into these facts, and to report upon them if desired.

The following is an extract from the letter which he did me honor to write to me, dated the 26th of last March:

'On my return home, I did not fail to obtain information from the workmen of the facts of the case, (the immersion of the finger in the incandescent melted metal,) and most of them laughed in my face, which did not deter me. Lastly, being one day at the forge of Magny, near Lure, I put the question again to a workman, who answered that nothing was more simple; and to prove it, at the moment when the metal in a state of fusion issued from a Wilkinson, he passed his finger into the incandescent jet. A person employed in the establishment repeated the experiment with impunity: and I myself, emboldened by what I saw, did the same. . . . I may observe, that, in making this trial, none of us moistend his finger. I hasten, sir, to acquaint you with this fact, which seems to support your ideas on the globular state of liquids; for the fingers being naturally more or less humid, it is, I think, to this moisture passing to the spheroidal state, that we must ascribe their momentary incombustibility.'

The following are the experiments which I have made:

I divided or cut with my hand a jet of melted metal of five to six centimetres, which escaped by the tap; then I immediately plunged the other hand in a pot filled with incandescent metal, which was truly frightful to look at. I involuntarily shuddered. But both hands came out of the ordeal victorious. And now, if any thing astonish me, it is that such experiments are not quite common.

I shall of course be asked, what precautions are necessary to preserve one's self from the disorganizing action of the incandescent matter? I answer, none—only to have no fear, to make the experiment with confidence, to pass the hand rapidly, but not too rapidly, in the metal in full fusion.

Otherwise, if the experiment were performed with fear, or with too great rapidity, the repulsive force which exists in incandescent bodies might be overcome, and thus the contact with the skin be effected, which would undoubtedly remain in a state easy to understand.

To form a conception of the danger there would be in passing the hand too rapidly into the metal in fusion, it will suffice to recollect that the resistance is proportionate to the square of the velocity, and in so compact a fluid as liquid iron, this resistance increases certainly in a higher ratio.

The experiment succeeds especially when the skin is humid; and the involuntary dread which one feels at facing these masses of fire, almost always puts the body into that state of moisture so necessary to success; but by taking some precautions, one becomes veritably invulnerable. The following is what has succeeded best with me: I rub my hands with soap, so as to give them a polished surface; then, at the moment of making the experiment. I dip my hand into a cold solution of sal-ammoniac saturated with sulphurous acid, or simply into water containing some sal-ammoniac, and, in default of that, into fresh water."

[We would like to see any man allow melted copper to be poured upon him with impunity, but every boy knows the trick, of running his finger through the flame of a lamp, and licking a red hot poker with impunity.

Canal Across the Isthmus of Panama.

At a recent meeting of the Institution of the Civil Engineers, London, Lieut. Loyd read a paper on uniting the Atlantic and Pacific by a canal across the Isthmus of Panama. His views inclined to a canal in preference to a railway. The paper reviewed the surveys of Garella, Morel, and others, who had examined the country subsequently to Col. Lloyd. It examined the various lines proposed; and gave reasons for preferring that which, starting from the bay of Limon, would proceed by a short canal, through a flat country, to the river Chagres—thence up the river Trinidad, as far as its depth would suit—and then, cutting a canal into the Rio Grande, debouch at Panama. This line, it was contended, in the present state of science of engineering, presented no obstacles, excepting the climate and the expense, to prevent a canal being cut of sufficient depth and dimensions to float, from one river to the other, the largest ship in her majesty's navy. The climate was stated, from personal experience, to be as good as in any tropical country, except in some particular spots where, from local causes, certain complaints were rife. The expense could be accurately estimated only by the survey of experienced engineers; but in a country abounding in fine timber, and the best building materials of all kinds—whilst no great chain of mountains, as had been fancifully depicted on suppositious charts, had any existence except in the imagination of the designer—it was fair to allow that the cost of a canal of such limited length could not be very great, and supply of water might be presumed to be ample in a climate where there was copious rain of nine months in each year. The means of accomplishing the work were then considered. It was argued that a portion of the convicts from that country might be more advantageously sent there than to the present penal settlements. The means of preventing their escape were shown; and a proposition was made for introducing with them a number of convicts from Bengal, and the other Presidencies, whose language and habits would effectually prevent their mingling with the British convicts; whilst their power of enduring fatigue under a tropical sun and during rains, and their simple mode of living, would render them valuable pioneers for the more robust Englishmen. It was stated that a great deal of native labor might be obtained at a cheap rate; sixpence or ninepence per day and his rations, consisting of a pint of rice, a pound of dried beef, and a "golpe d'aguardiente," being the ordinary pay of a "peon." The chief point, however, insisted on by the author, was the great field opened in the isthmus for emigration, for the surplus population of that country. He contended for its superiority over the Canadas and over Australia. It was comparatively within an easy distance; the emigrant would be at his destination almost on landing; the resources of the country were great and the productions varied and cheap, whilst the present population was infinitely disproportioned to the superficial area of the country. It was argued that a grant of land might be easily obtained, in liquidation of the debt owing by the government of the country, and as the British had once possessed an establishment there in 1675 to 1690, under the charter of the "Scotch Darien Company," so a footing being again obtained, a barrier of the most formidable character would be opposed to the annexation propensities of transatlantic brethren, who were making rapid strides towards the possession of this valuable tract. Appended to the paper was a copy of the commission granted to Lieut. Col. Lloyd by Gen. Bolivar, authorizing his examination and survey of the isthmus and of two rivers—which had previously been most jealously refused to every one. This document was alluded to with some natural pride, as proving that to an English engineer was due the merit of having been the first to examine and propose a work of such vital importance to the whole world, but which had been since claimed, and in fact appropriated, by other persons without acknowledgment.

[The reasoning in the above paper is apparently incontrovertable, but experience in the first Scotch colony should be taken as evidence to prove that the climate is not adapted to northern constitutions. If Britain plants a colony there, so should the United States.—Our possessions on the Pacific demands of us the right of way, in some way or other, across the Isthmus.

Manufacture of Iron, Phosphorus, &c.

One of our subscribers writes us, that having tried various plans in vain, to get rid of the phosphorus in his ore, (Wisconsin Hematite) he is now desirous of trying Wall's process, if we can furnish the information, so as to test its value in that respect. We would state, that Wall's process professes to remove the phosphorus, and being in possession of the principal features, we here present them for the benefit of our subscribers who are in the irou business.

Mr. Wall's patent consists of two parts, first in adding certain substances to the metal, while in a state of fusion; 2nd, in applying electricity to the metal while in a state of fusion, and during its cooling. In carrying out the first part, two compounds are made use of, termed A and B.

The compound, A, is formed by mixing two parts of iron filings or turnings with five parts of black rosin, by melting the rosin and stirring in the iron filings. When the mass has sufficiently cooled it is made into balls of abou five pounds weight each; and in using them these balls are thrown in the melting-furnace on the surface of the fused metal, in the proportion of one of the balls to every 5 cwt. of metal. The compound B, is formed by thoroughly mixing two parts of common salt and five parts of rosin, turpentine, or other carbonaceous matter, and making this also into balls of about five pounds each, and throwing these on to the surface of the melted metal, in the proportion of one pound to each cwt. of the metal, after the compound, A, has been employed. In carrying out the second part, a battery is employed, consisting of platinum and zinc plates, containing eight pairs, 6 inches by 4 of active surface, in separate cells of dilute sulphuric, and strong nitric acid, arranged in the form known as Grove's battery, or 32 pairs of same sized plates arranged in the manner, commonly known as Smee's battery, which give sufficient electricity for all general purpose. In applying the electric current a rod of iron is inserted into each extremity of the mould, into which the metal is to be cast, if the casting be horizontal; or into the bottom and top of the mould, if the casting is vertical. These two rods of iron are connected with the two poles of the battery respectively; and when the melted metal is poured into the mould, it serves to complete the cirtuit, and electricity will continue to traverse it as long as the connection with the poles of the battery remain unbroken. The current should be kept up for a considerable time even after the metal has solidified; but if continued for too long a time, the metal would be decarbonated and converted into wrought iron. The patentee also passes an electric current through the fused metal while in the furnace, by inserting a rod of iron in the lower part of the furnace so as to be in contact with the metal, which rod is attached to one pole of the battery, while another rod in connection with the opposite pole is moved by the operator in constant contact with the melted mass, over every part of the surface, thus directing the current through every portion of it.

We presume that this information will be of considerable interest to all our iron manufacturers. Overman, in his work, says, "Hydrated Oxide of Iron, Brown Oxide, Hematite Bog Ore, should all be roasted, not for the purpose of oxidation, but to drive off the acids, and destroy the sulphurets and phosphurets—all ores of this class contain more or less injurious matter. Sulphates of iron should be carefully roasted, so should phosphates, with a liberal access of air."

The more carbon that is present, the greater difficulty there is to drive off the phosphorus, for carbon is necessary in every case to produce a combination of phosphorus with the metal —the process of Wall, therefore, in expelling the carbon, would lead us to infer that it would be most suitable for the removal of phosphorus, and sulphur also. The process is at least worthy of a trial by every man connected with the business. The patent is English.

Franklin's Mode of Lending Money.

"I send you, herewith, a bill of ten louis d'ors. I do not pretend to give much, I only lend it to you. When you return to your contry you cannot fail of getting into some business that will, in time enable you to pay all your debts. In the case, when you meet another honest man in similar distress, you will pay me by lending this money to him, enjoining him to discharge the debt by like operation when he shall be able, and meet with such another opportunity. I hope it may pass through many hands before it meets with a knave to stop its progress. This is a trick of mine to do a great deal of good with a little money. I am not rich enough to afford much in good works, and am obliged to be cunning, and make the most of a little."

To Cure a Felon.

Take one table spoonfull of Red Lead and one table spoonfull of Castile Soap, mix them with as much weak lye as will make it soft enough to spread like salve, and apply it in the first appearance of the fellon, and it will cure it in ten or twelve hours.

J. D. B.

Bedford, March 25th, 1850.

© 1850 SCIENTIFIC AMERICAN, INC

New Inventions.

Brown's Water Gas.

Having had some enquiries made of us about what is termed Brown's Water Gas, recently patented by a gentleman of Baltimore, we would state that it is made out of the hydrogen of decomposed water and a mixture of carbonic gas, made from resin. Our Washington correspondent writes us, "The people here are still in ecstacies with the Water Gas. From a number of experiments made it was shown that water gas, consuming 2 feet and 6-10 per hour, emitted a light from the burner equal to 25 sperm candles; while with the common gas the same burner consumed exactly 4 feet, and gave light only equal to six sperm candles. The price of the coal gas is $4 per 1000 feet, and that of the water gas only $1,50."

The patent of Mr. Brown is not for the gas, but the machinery to make it. There is a patent older than his for making the same kind of gas. The claims of Stephen White, page 166 (this Vol.) Scientific American, precedes Mr. Brown's on page 198. White's gas was exhibited at the last annual Exhibition of the American Institute, and was exhibited in England nearly two years ago, and is described on page 285, Vol. 4, Sci. Am.,—the description there agrees with that of the Baltimore papers, regarding Brown's. Any body can make gas from water, and use the hydrogen with carbonic gas, if he or they use apparatus different from those patented.

Manufacture of Ice.

The Paris scientific reporters notice, with approval and adoption, the very ingenious invention of Dr. Gerrie, of Florida, of making ice by expansion of highly compressed air previously reduced to the ordinary temperatures. They notice, likewise, the sort of claim to priority which Sir John F. W. Herschel has put forth in the London Athenæum. The astronomer adduces only oral suggestion on his side, made privately to friends within the last four or five years. He adds in postscrip:—" An old steam-boiler, buried some twenty or thirty feet under ground, in well rammed earth furnished with a condensing pump (worked above ground,) and one eduction pipe opening by a stopcock through a rose into water, would in all probability supply ice ad libitum, for the use of a family in the country:—the condensation being performed over night".—[Exchange.

The invention of Dr. Gerrie is one which found its way into France through the colums of the Scientific American.

Woolen Printing—Great Improvement.

Messrs. Holt & Brierly of Lowell, have now in successful operation a new improvement of their own discovery, which promises to yield a rich reward. It is the printing of woolen goods, in any style of stripe or figure that may be desired, and in perfectly fasts colors, such as will stand the test of thorough washing. Mr. Thomas Brierly is the original inventor and the discoverer of the process of this printing, and has it secured by patent. The colors are of superior brilliancy, and the style of goods is universally admired. For linings of ladies' and gentlemens' cloaks and coats, we predict that these goods will soon become all the rage. For childrens' clothing, too, they are so much prettier than any thing in the market, that they can hardly fail of a great run.—[Exchange.

[The machinery spoken of above may be new, but it is no new thing to print both fast and fugitive colors of various patterns on woolen goods by machinery.

Improved Axle Box.

Mr. Wm. H. Hovey, of Hartford, Conn., has invented an improved axle box, whereby the lubricating material is retained in the most simple manner perfectly tight, by two regulating arched springs, in combination with an elastic metalic packing ring, whereby the face of the ring is kept always true up against the box. Measures have been taken to secure a patent.

DICK'S ANTI-FRICTION PRESS.

The accompanying engravings represent Mr. David Dick's patented press, adapted for pressing cotton, punching, straightening railroad iron, embossing, and for every purpose of pressing. It is compact, and presents a most important arrangement of mechanical powers, to avoid friction. The great principle of this invention is the saving and centralizing of the power, by directing the power which is applied through a line of contact points. The most perfect machine is that which transmits the power applied, in any ratio, multiplied into time, or what is better in machinery, "space," with the least loss by friction. In all machinery constructed to gain power, by losing time, to use common terms, the loss by friction is very great, such as block and tackle, and other machinery, screw, &c., where the power is transmitted over a great extent of surface. In machinery for lifting or pressing, 100 lbs. passing through two feet space, will lift 200 lbs. through one foot of space, and so on in the same ratio, barring the friction, which is the great evil of all complicated machinery. This great drawback (friction) on power is removed in Mr. Dick's press, so far as positive mathematical demonstration can test—and there is no surer way—its value.

Fig. 1.

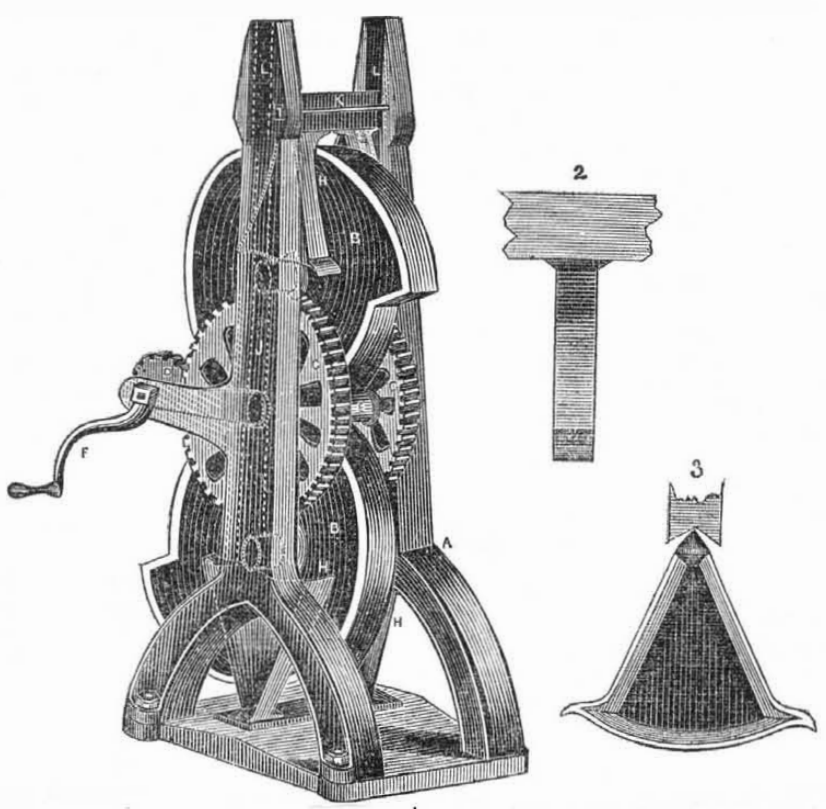


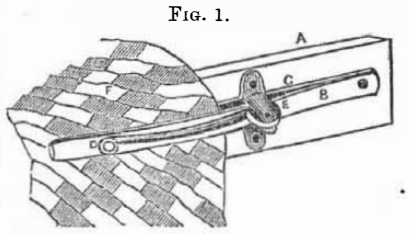
Fig. 1 is a perspective view; fig. 2 is a side view of the sector, fig. 3. All the sectors are formed alike, but reversed in position—the upper and lower. A is the upright frame or standards; B B are two partial rotating cams. C C are two cog-wheels on the axle, E. This axle is allowed to move slightly up in its bearings; D is a pinion on a fixed axis, it is operated by the crank handle, F. A pinion and lever are employed, as required, on each side; H H are sectors (four), one on each side of the cams, B B. They are formed as represented by fig. 3, which represents the position of the top one; the lower ones are in a reverse position, viz., resting on their apex. The axle of the lower cam, B, rests on curved surfaces of the lower sectors, and the axle of the upper cam presses on the curves of the upper sectors. The axle of the upper cam moves upward in its side bearings, and the upper sectors are pressed upward, pushing up the plate or frame, R, which moves upward in the guide slots, L L, to press any thing that may be placed on it, against some rebutting back. The upper sectors move in one direction while the lower ones move in the contrary direction, bringing their curves to act most effectually, ballancing all the motions, and acting in right lines through *points* of contact, produced by the contact of the curved surfaces of the axles, cams and sectors, consequently the amount of friction is very small.

These presses have received the highest commendations by all those who have used them. We have seen testimonials of their utility from the Camden and Amboy (N. J.) Railroad Company, the Methodist Book Concern, this city; Mr. Morse, the Assistant Engineer, of the U. S. Dry Dock, at Brooklyn, and is excellent for a printing press.

They are manufactured by Mr. Joseph E. Holmes, Jane street, corner of Washington, New York. The best of materials are employed in their construction, and they are made and put together in the best manner.

Bed-Clothes Clasp.

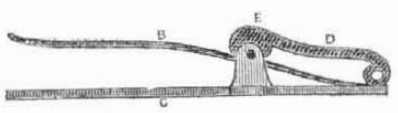
Fig. 1.



This is a little instrument for securing bed-clothes to prevent them from being drawn off persons while asleep. There is not a single family but has felt, or at present feels the want of such an instrument. Almost every child requires the bed-clothes to be secured snugly, and more especially when two sleep together. Here is the very thing required and desired, without a pin or pike to make a mother's heart uneasy, and will prevent many *colds*, which are the causes of frequent and dangerous sickness.

The instrument is small and neat. Figure 1 is a perspective view. Figure 2 is a side view. The same letters refer to like parts. A is the bed rail; C is a quite a small cast

Fig. 2.



metal plate, secured by screw nails to the rail of the bedstead. B is a steel spring about half an inch broad, secured at one end by a nail to the plate. It is bent upwards with its tension in the same direction. There are two little upright ears cast on the plate, C, with a pin passing through them at the top, securing a small cam, E, between the said ears. This cam is made in one piece, with its handle, D, which acts as a lever. This lever turns on its fixed axis, or pin, between the two ears, and by the form of the cam, when the handle, D, is turned in one direction, the spring B, as in fig. 1, is pressed down on the plate, A, securing the quilt, H, firmly between the spring and the said plate. When the handle, D, is turned in the other direction, the clasp is open, as represented in Fig. 2. The clothes have but to be drawn through between the spring, B, and the plate, C, and the lever, D, turned the contrary way from what it is in fig. 2, when the clothes will be firmly secured and retained without the least possibility of being drawn out, for the peculiar form of the cam, E, makes this clasp retain the clothes like a vice. Every bedstead should have two, at least, of these clasps on it.

The inventor is Mr. Francis A. Rockwell, of Ridgefield, Ct.; the agents here are Messrs. Tuttle & Bailey, 210 Water st.

We would respectfully state that this is the distinguished clasp (the fame of which is already wide-spread) for preventing the "kicking of the kiver off."

Water Pressure Engine.

In mountainous districts, where there are high falls of water, with only a small quantity, a water pressure engine is much better than a water wheel. At the Alport mines, England, there is a water pressure engine, the cylinder of which is 50 inches in diameter, and the stroke 10 feet. It was worked by a column of water of 132 feet in height, so that the proportion of power to act on it was as the area of a piston to that of the plunger—namely, 1,963 to 1,385, or fully 70 per cent. This engine has never cost them $60 a-year since it was erected in 1841. Its usual speed was about 5 strokes per minute, but it was capable of working at 7 strokes per minute without any concussion in the descending column, the duty actually done being equal to 163 horse-power:—Area of plunge 9.621 feet×10 feet ×7 strokes=673.41. 673.41×62.5×132= 5555632÷33000=163 horse-power. When water acts by its gravity or pressure, those machines do the best work when the water enters the machine without shock or impulse and quits it without velocity. They thereby obtain all the available power that the water will yield with the least loss of effect; and this result is best accomplished by making the pipes and passages of sufficient and ample size to prevent acceleration of the hydrostatic column.

Acoustic Apparatus to enable the Deaf to Hear in Church.

At the Elder street Chapel, Edinburgh, Scotland, there is erected a contrivance for deaf persons to hear, which is well worthy attention. In front of the book-board, and projecting semicircularly from it to the extent of about nine inches, is a deep tapering cup or horn of gutta percha, the upper edges of which are in the plan of a book-board, the longest diameter of its orifice being about 18 inches. This is covered with cloth uniform with the pulpit, the drapery of which is arranged around it; so that the eye detects nothing but an elegantly curved outline, in place of a straight and box looking front to the pulpit. The lower end of this corniform cup tapers into a gutta percha tube of about two inches in diameter, which is carried down within the pulpit frame; and to that main trunk are attached smaller pipes which are laid out to the required pews, where a flexible tube with an ear-piece, is connected, by means of which the deaf spectator becomes a hearer, even the very deaf, who did not hear one word, or the echo of one sound before, and is enabled to follow the speaker through his whole discourse as plain as if he spoke into the conversational trumpet.

Improved Scribing Machine.

Mr. John Shellenberger, of Indianapolis, Indiana, has invented a very excellent scribing machine, which is suitable for bevelled and straight work. The scribing tools are easily shifted in slots running along the frame, and set by screws at the points desired, both horizontally and upright. The boards or timber for panels, doors, &c., are placed on fixed rests, and by pressing a treddle with the foot, the frame with the scribing tools marks out the proper places. Thus the setting of the tools for one kind of work, saves the laying out of work of the same kind, and makes all perfectly true and exact. The tools for bevels work different, in a plate, but it is operated in the same way. Measures have been taken to secure a patent.

© 1850 SCIENTIFIC AMERICAN, INC

Scientific American

NEW YORK, MARCH 30, 1850.

Miscellany about Inventors.--Patents.

A respected correspondent writes us, saying, "Have you not a word to say about patent assignees as well as inventors, as many of them purchase patent rights at a great pecuniary loss."

In speaking of inventors, we hold their rights to be those of the patentee. We often speak of patent speculators, meaning by that term, those who care not a snuff for their assignees—those who try to make money by hook or by crook. There are some men who are always scheming to make money, by inventing some *new* and *wonderful* improvements for the purpose of getting men to advance them money. A company once paid an inventor, in New York, $40,000 for his patent, from which they never realized a shilling. He is now in Europe. On the other hand, we know an inventor, a simple honest man, who two years ago made a valuable improvement in a certain manufacture, and assigned it to his employer, for which he was paid the liberal sum of, *not one* dollar. The assignee now draws a liberal revenue for his patent—the inventor can scarce support his family. Laws cannot make men honest, but their object is to prevent injustice done by one to another.—Last week, we commented upon a Bill which had been introduced into Congress; it has been amended by striking out any foreign State or Territory. It now applies only to Canada and the British Provinces and in all likehood will become a Law. It will be found on another page.

Some people honestly believe that inventors should receive "the same legal protection as authors in their copy rights, because the right derived is from the same clause in the Constitution." The right of book property is very different from machines. The works of Irving cannot be counterfeited by any other. A change in phraseology would destroy the whole value of Sleepy Hollow. The modifications of a patented machine; does not destroy the claims of the patent, whereas, the ideas of an author, if presented in a new dress by another person, could not be construed as an infringement of a copyright. There is no inventor of a machine who would be willing to come under the copyright law, in preference to the Patent Law. Let any man reflect upon this question as we have done, and his opinions, will not be far apart from ours. On last Thursday, the 21st, the application for an injunction against the House's Telegraph by the Assignees of Prof. Morse, F. O. J. Smith and others, before Judge Woodbury, in Boston, was denied. The case is to be tested at common law—the best way we believe. In this opinion we differ somewhat with a correspondent on another column. No judge *should* grant an injunction against one patentee, on complaint of another, before the case has been tested by a trial at common law. The patent of a defendant is just as sacred as that of a complainant, until the question of infringement is proven and decided by trial.

Uses and Abuses of Air.

By John H. Griscom, M. D., published by J. S. Redfield: New York.

Health Recreation.—We have often called the attention of our readers to the subject of "good ventilation and free respiration—breathing the brave fresh air." It affords us pleasure to take up the work of an author who loves to inhale the heaven-born fluid, pure as the God of Heaven designed it should be inhaled by all men. The Doctor is evidently at home with his subject, and we are with his book. "Health," he says, "is the greatest terrestrial aim of both rich and poor—the climax of all earthly blessings, and when lost, no earthly reward seems too high for its restoration." How true—how forcibly true. What would the blind not give to be restored to sight, and the lame to walk. And above all, what would that man give who is bowed down with asthma, and trembling on the confines of the tomb, to drink in a draught of pure ruby health? Aye, what would all of them not give for such blessings? That man who has nothing but a crust of bread, a pitcher of water and health for his repast, is richer by far than him who pines in sickness on a silken couch, and whose table groans with beef, bread and wine. Wealth and fame are no equivalents for health.

One great cause of disease is the inhaling of impure air. The atmosphere is an ocean, in which we live, and if the God of Heaven was to lift it up above the highest mountain on our globe, for one short ten minutes, the whole human race would cover its surface "like leaves of the forest by wintry winds strewn." When the atmosphere is mixed with any other gas whatever, it becomes unfit for the purpose of respiration. How necessary is it, then, that great attention should be paid by every person, to obtain, always, a plentiful supply of pure air, yet the great majority of mankind appear to act upon the supposition, that food, drink, and raiment constitute the whole essentials of life. What man is there who would drink of the reedy pool in preference to the crystal fountain, and yet there are thousands who appear to be content to quaff twenty draughts every minute out of an impure atmosphere. It is a terrible thing to see men, day after day, toiling and plodding for life (rather death) in the dark, damp cellars of our cities, and it is dreadful to behold women and little children crooning and stifling in ill-ventilated apartments. Great Reforms are yet to be made in our dwelling houses, schools, workshops, &c. The christian civilizer must devote more sermons to physical ethics than he has done, for the temple of the Spirit is greater than a temple reared with hands. Those engaged in sedentary occupations, should *force* themselves often to active exercise in the open air. It is a fact, that the closer a person is confined, his occupation becomes to him like Bunyan's enchanted ground—his desire to stir abroad becomes weaker and weaker. What a glorious thing it is to shake the dust of the city from the feet, and mount for a space the neighboring heights. Crowded into narrow apartments and abiding in step-across-streets,—health soon flags, the shoulders bend, and the mind loses its power. How exhiliarating to drink in the fresh breeze—to feel the shoulders erecting themselves like pillars, and the chest swelling to its natural form like a graceful quirass; then the foot "becomes like bended bow, the mind like arrow free." Not a philippic of Demosthenes would ever have descended upon the tide of time, had he not often bared his bosom to the breeze, and on the Athenian Cliffs mingled his voice with the winds and waves of the "Great Sea."

Railway Errors.

It is a matter of surprise to many, to see how often exploded theories are revived, and how many inventions are re-invented. Old things are continually floated up on the tide of time, like corks that have been swept for a time beneath the waters of an eddy. How many rotary engines have been invented since the days of Hero. How many *improvements* in propellers, have come and gone. In every department of Science and Art, we can witness the repeated attempts at supposed improvements, and repeated failures. In the construction of machines, the ingenious theorist is too apt to make but a bungling affair of it,—but when combined with practical skill, the scientific theorizer is sure to be the most successful man. The man who is merely practical is limited in the range of objects, for want of a knowledge of what others have done and what others are doing. He often expends years of labor upon some invention which he supposes will astonish the world, when lo! after it is fully completed, he finds to his loss and chagrin, that the same thing has been previously invented by some other person. It is, therefore, positively necessary that every inventor, or any man who has an idea of inventing, should be an extensive reader and acquainted both with the past and present of *physical science*.

We have lately seen a number of paragraphs commenting upon "the errors of the present railway system. One capital error," it is stated, "is the immense weight of engines and tenders, that the power expended is employed in moving continually to and fro to the great destruction of the rail;" to remedy this evil, one proposes lighter engines with some new way to give them greater adhesion on the rail; another believes that "the true economy of railway conveyance will never be attained, until the moving power is stationary, and the rail shall bear only the goods to be carried."

It is neither by the weight of the locomotive being reduced, nor by stabling the iron horse, that improvements are to be made in the Railway System. Why? Because no general plan can be laid down suitable for every line of railroad. It would not be profitable to have heavy engines on one line, and it would not be economical to have light ones on another. If the useful effects of a locomotive is W X V= R, (weight, velocity=resistance) then the economical weight of the locomotive will depend on the work it has to perform. Experience is the true monitor, and it has decided for the heavy locomotives for a great velocity. On short lines, with light trains, and a moderate velocity—the economy of the light engine is self-evident—but how light? that is the question. Some people have an idea, that it would be profitable to have locomotives that would mount up hills, and gently slide down into the valleys. Many plans have been invented to accomplish this object, but none of them for passenger lines, have been successful. Neither have stationary engines been successful for inclines on passenger lines. The Mohawk and Hudson Railroad, employed a stationary engine on the incline at Albany, but the Road never paid until the line was changed in direction, by a detour, to avoid the incline. On lines to carry loads of mineral, (coal, &c.) inclines and stationary engines may be most profitable, especially where the heavy train is employed when descending, to carry up or assist the empty wagons on another track. We know a coal railroad which is an incline from the mine, whereby the heavy trains, by descending to the depot, carry up the empty ones on the other track—no engine being used at all—nothing can be more economical than this.

For long lines and passenger trains, the most economical system to be pursued, is to make the road to the nearest possible level—not to be stingy in levelling the mountains and filling up the valleys; lay down heavy rails, and employ locomotives of about 20 or 24 tons, constructed of the best materials and made in the most skilful manner. Inclines cause a continual tear and wear—therefore they must be set down as a constant disentegrating cause, whereas to level the mountain and fill up the valley, amounts only to a single expense, and great though it may be, it is not so great, in our opinion, as to have steep grades. The great evils of our present railway system, is a false economy of using too much miserable metal in the rails, wheels, axles, &c.; but a better spirit is abroad—a more enlightened economy is now beginning to rule our railway councils, by the employment of wrought instead of cast iron in those parts subject to concussions and torsion. We may therefore expect to hear of fewer accidents than formerly, especially since the laws so effectually reaches the hearts of stockholders through their pockets.

Reform of the Patent Laws.*

It is a mistaken idea, to suppose that the inventor will be more faithfully protected in his rights by any reform of the Patent Laws which does not reach the practice of our United States Courts, and there does not appear to be any provision made for this in any reform yet presented. While there exists unjust men in the world, unjust acts will be done by them, whether those acts be fraud or infringement of Patented Rights. The greatest boon to inventors and the owners of Patent property, would be a cheap method of deciding their cases by law. This, however, would not suit the gentlemen of the bar, and I say, that until such a reform accompanies others in our Patent codes, little good will be done for the benefit of the class spoken of. At the present moment, the fees of counsel to pursue patent cases in our United States Courts, are so high, that unless a patentee is rich, or has *good friends*, there is scarce a possibility of him troubling the court with his case—his rights will be trampled with impunity by those who have the means to "pay the greatest lawyer's fees." And rich patentees are perfect lords and despots, ruling it over poor patentees in the same line. For example, a rich man gets a patent, or a rich man owns one, and a poor man gets a patent for something in the same line, but entirely different; the first thing that he knows of his difficulties, is a notice to "stop using his invention, or an action for damages will be instituted against him." Having some American grit, he snaps his finger at the summons, and goes to an attorney—one who has been admitted to practice in the U. S. Courts. He tells his case, his lawyer gives it a *thorough* examination—then advises to employ some great patent agent, also, as *adviser*, and tells his client that with such an array of ability, he will come off with flying colors. The threatener, in the meanwhile, applies for an injunction, and gives due notice to the poor patentee. His counsel collects facts, gets old specifications, drawings, affidavits, and what not, to rebut all the complainants alledgements, when what should the complainant do but withdraw his application, and by this trick lead the poor defendant into two or three hundred dollars expense. This trick may be repeated in other District Courts, until the poor patentee is crushed with despair, gives up the contest, and the rich man will soon, some way, not fail to get an injunction. This is a mean and contemptible way of acting—but there are some patentees at work upon this very system at the present moment. By this very same process many people are frightened from using things that in no part belong to the persons who claim them, and in this manner, it may truly be said, "the terrors of the law are as great for evil, in many cases, as for good in others." It may be said "he is a poor jurist who only can tear down, and knows not how to build up." There is some truth in this, but evils have first to be discovered and pointed out, before the mind can or will look for a remedy. A Bastile may be overthrown without rearing up a substitute. Some propose to have a Court or Assembly of *Wise Scientific Men*, who shall sit in Washington and try all Patent Cases. This might be a good plan, but as long as there are so many disciples of Cicero in both Houses of Congress, no change may be expected from Common to Civil Law, in the cases of patents. As long as our people are pleased to support as many lawyers in New York as there are in all England, they will not, in all likelihood, move in the matter with force and sincerity.

Junius Redivivus.

New York.

* The views herein presented are held by many, and I have presented them in the strongest light. I will show an opposite view next week. J. R.

Sheathing Ships with Zinc.

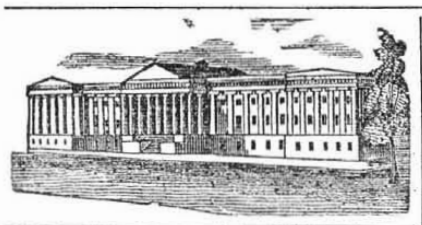
In answer to a note in the Scientific American of last week, the Vieille Montagne Zinc Mining Company, No. 25 William street, this city, has sent us a pamphlet relating to the uses of Zinc, and especially respecting its employment as sheating for ships. It appears that no less than 1400 French vessels are sheathed with zinc, and 101 English, and since the first of January 40 American vessels have been sheathed, and the orders are increasing in a triple ratio weekly. The zinc, it is stated, will last six years, and sometimes nine, while copper is asserted to last only four and yellow metal three years. Zinc is 6½ cents per lb., copper 22, yellow metal 17½.

Use of Chloroform in Scotland.

In an article in one of the London Journals, it is stated that during the last two years, it has been calculated that chloroform has been used in from 80,000 to 100,000 cases in the city of Edinburgh, and without an accident or bad effect of any kind whatever traceable to its use.

The boiler of the steamboat Troy, exploded at Buffalo, on last Saturday. A great number were killed and injured. When will there be an end to such wholesale slaughter?

© 1850 SCIENTIFIC AMERICAN, INC



Our List of Patent Claims.

At the time we went to press, our list of Patent Claims had not arrived from the Patent Office, and no word sent us of the reason of the delay. This makes it very inconvenient for us, and will disappoint many of our readers.

Decision in the Great Patent Case.

We are informed that Judge Nelson has recently decided the case in Equity of the Troy Iron and Nail Factory, against Erastus Corning and others, involving the right to use the machinery by which the present improved form of hook-headed spikes are made for use on railroads. The case presents some points of interest to the public, from the large amount of property involved, and the exclusive right claimed by the plaintiffs to manufacture these spikes, which are now used on almost every railroad in the United States. The cause was argued last summer upon the merits on the pleadings and proofs. The decision of the Court was, that the plaintiff's bill be dismissed with costs. S. Stevens for plaintiff; S. Blatchford, D. L. Seymour and William H. Seward, for defendants.—[Troy Budget.

It would be a particular favor to know when the above decision was made, and where. We are doubtful about its correctness.

A Bill Giving further Remedies to Patentees.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That if any person or corporation shall import, or have in possession, for the purpose of traffic or sale, any articles imported into the United States from Canada or any British Province, and manufactured in whole or in any part in Canada, &c., by any process or machine, or by any substantial modification of any process or machine, for which there may be at the time a subsisting patent owned by any citizen of the United States, such person or corporation shall, upon due proof thereof, before any court of competent jurisdiction, be deemed to have infringed said patent, and be liable for all damges, in the same manner, and to the same extent, as in other cases; and the articles so manufactured and imported shall be forfeited to the use of the owner of said patent.

Sec. 2. And be it further enacted, That whenever a patentee, or any person holding under him, shall file a bill in equity, verified by oath or affirmation, in the circuit or district court of the United States, complaining that any person or corporation has imported, or has in possession, for sale or traffic, any of the articles described in the preceding section, and shall make it appear, to the satisfaction of the judge, that the facts alleged are probably true, the said judge shall issue an order to the marshal, directing him to take said articles into his custody, and hold the same, subject to the final order of court, and may further by injunction restrain the sale of, and traffic in said articles; and after due notice to all parties may, upon a final hearing of the cause, decree said articles to be forfeited to the use of the complainant, provided, however, that from all judgments and decree of said courts, a writ of error or appeal shall lie in the same manner as is now provided by law in relation to other judgments or decrees.

Patent Office Report.

A long and ably written article has appeared in the Herald, criticising the Report of the Commissioner of Patents. Its vein is full of irony, and it bears *unmistakeable* traits of having been penned by some *one* acquainted in the Patent Office.

Petition for Renewal of A Patent,

Geo. Griggs, of Roxbury, Mass., has petitioned the Commissioner of Patents for a renewal of his patent for Railroad Frogs. Persons opposed to this petition will be heard on the first Monday of next June, at 12 M., before the Commissioner.

Completion of the Britannia Tubular Bridge.

The opening of this magnificient structure, looked forward to with so much interest, took place on March 5.

At 6½ o'clock in the morning, three powerful engines, (the Cambria, the St. David, and the Pegasus,) of from 50 to 60-horse power each decorated with flags of all nations and union jacks, steamed up, and harnessed together, started from the Bangor station. At 7 o'clock the adventurous convoy, progressing at a speed of seven miles an hour, were lost sight of in the recess of the vast iron corridor. Instead of being driven through with a dispatch indicative of a desire on the part of those who manned it to get in and out with the utmost expedition, the locomotives were propelled to a slow and stately pace, with a view of boldly proving, by means of a dead weight, the calibre of the bridge at every hazard. The total weight of the locomotives was 90 tons. The appearance of the interior of the tube during the interesting experiment was of a novel and remarkable character. The pauses that occurred during the progress of the transit, furnished an imposing view of the interior of the gigantic structure, which, as contrasted with that of a tunnel of similar length, was rendered comparatively cheerful by the recurrence at intervals of loopholes of light, which serve the three useful purposes of ventilating, and lighting, and divesting the tube of steam from the passing engines. The locomotives were brought to a standstill in the centre of each of the great spans, without causing the slightest strain or deflection. The first process—that of going through the tube and returning—occupied altogether ten minutes.

The second experiment convoy that went through consisted of twenty-four heavily-laden wagons, filled with huge blocks of Brymbo coal, in all, engines included, an aggregate weight of 300 tons. This was drawn deliberately through, at the rate of from eight to ten miles an hour, the steam working at quarter power. During the passage of this experimental train through the tube, a breathless silence prevailed that was almost solemn until the train rushed out exultingly, and with colors flying, on the other side of the tube, when loud acclamations arose, followed at intervals by the rattle of artillery down the straits. Upon the return, which occupied about seven minutes, similar demonstrations ensued, and during the progress of the train, those who stood upon its top to ascertain any possible vibration, reported they could detect no sensible deflection.

An ordeal stronger still was then resorted to; a train of 200 tons of coal was allowed to rest, with all its weight, for two hours in the centre of the Carnarvonshire tube, and at the end of the time, on the load being removed, it was found to have caused a deflection of only four-tenths of an inch. It is remarkable this amount of deflection is not so much as one-half hour of sunshine would produce upon the structure, it being moreover calculated with confidence that the whole bridge might with safety and without injury to itself be deflected to the extent of thirteen inches. These loads, it is most material to remember, are immensely more than the bridge will ever be called upon to bear in the ordinary run of traffic, though engineers are of opinion that it would support with ease, and without much show of deflection, a dead weight on its centre of 1,000 tons. Twelve miles an hour is the limit of speed at which Mr. Stephenson intends that trains shall at first go through, more particularly as there are sharp curves at the termini of the tube.

About 12 o'clock another testing train was prepared to be taken through the tube. It consisted of the three engines, 200 tons of coal, and from 36 to 40 railway carriages, containing between 600 and 700 passengers, packed together as closely as figs in a basket, all so clamorous and eager to "go through the tube," that it became impossible to accommodate them.

At length obediently to a long wild whistle, which was almost long enough to cover the extent of tube, they glided slowly into the interior, saluted by a loud burst of "Rule Britannia" from any array of Liverpool seamen up aloft in the towers at the entrance, on the front of which, cut deeply in the stone, were the words: "Erected Anno Domini, 1850; Robert Stephenson, Engineer." As the huge train trailed slowly through the tube, successive salvos of artillery were fired at each end.

It may be interesting to know, that the general opinion of the numerous engineers present appears to be that the Britannia tube bridge is as trustworthy as any tunnel on *terra firma.*

The Gulf Stream.

At the meeting of Scientific Association, at Charleston, Lieut. Maury read a very interesting paper on the "Gulf Stream." In it he described the difference between New York harbor, and that of Charleston, in a commercial point of view, to be owing to discovery made by Dr. Franklin, of the increased temperature of the Gulf Stream, over the adjacent waters.

Formerly, before the influence of the Gulf Stream was known, vessels leaving England were accustomed to go far South to take the trade winds on the coast of Africa, so as to bring them direct to Charleston on the route home. In fact, at that time, Charleston was the half-way-house between Liverpool and New York. Vessels in the winter, attempting to enter New York, frequently became covered with ice, and put back to Charleston or the West Indies, to thaw, and remain until Spring. Now, when such a case occurs, the vessel, instead of retreating to a Southern latitude, puts back into the Gulf Stream, where the increased temperature of the water so far loosens her icy covering, as to permit a safe and comfortable continuation of the voyage to New York. From the examination of numerous log-books, kept by vessels sailing between New York and the West Indies one hundred years ago, Lieut. Maury had ascertained that the average rate of sailing with a good breeze did not exceed one mile per hour, since action of the currents were so powerful and so little known, that the vessels were considerably carried backwards.

At the period referred to, shipmasters never knew their longitude within five or ten degrees, and after the discovery of the Gulf Stream, it was proposed to ascertain, in part, the position of the vessel from the temperature of the water. In 1818, the first regular line of packets between the United States and England, was established by Jeremiah Thompson of New York. It was proposed to start regularly from both sides of the Atlantic once a month, and vessels of 300 tons were built for the service.

The success of this plan was regarded by many as extremely problematical, yet the undertaking so far succeeded that, at the expiration of three years, a ship of 500 ton was added to the line. The trade was, however, insufficient to support so large a tonnage, and the vessel was withdrawn. Now, said Lieut. Maury, we are building vessels of 2000 tons.

Lieut. Maury considered that the opening of a ship canal across the Isthmus of Panama, would effect as great a revolution in commerce as the world had yet witnessed.

The Effect of Tides.

Lieut. Davis, U. S. Navy, delivered a course or lectures at the Smithsonian Institute, in which some singular and interesting information was brought forth. From observation and collected information he stated that changes were constantly going on along our coast of the utmost importance to the commerce and navigation of our country. At Sandy Hook, for example, where there is now dry land there was in 1836 forty feet of water; and this is the main ship channel. In 1867 there was an open ship channel from Barnstable bay to the ocean, and as late as the beginning of this century, in heavy storms, the sea occasonally made a breach over the same place; but the process of construction under the law of tidal action, has closed up this opening entirely, and the place is now an important part of Cape Cod.

Other well authenticated instances, derived from a comparison of the recent surveys with the earliest charts of our coast, were mentioned. For example, Monomy Point is constantly extending to the south. Under the operation of the tides, a number of harbors and inlets, particularly along Martha's Vineyard and Long Island, have been gradually closed and converted into ponds. The remarkable fact was stated that the salt water of these ponds had given place, in the course of a few years, to fresh water. Another remarkable fact is, that the bottom of these ponds is frequently deeper than the bottom of the adjoining ocean.

This fact is interesting, since it is found that the inhabited parts of sandy deserts, such as the oases of the Desert of Sahara, present similar depressions, the bottom of the valley being, in some instances, below the present level of the sea. The lecturer also stated that these ponds, in the course of the change, become the home in succession of salt water, brackish water, and fresh water animals, and thus afford a beautiful demonstration of the geological formation of basins, such as those of London and Paris, in which the remains of successive races of animals are found in a fossil state.

Lieut. Davis has deduced from his numerous observations the law of tidal deposites—namely, that all deposites on the external coast are made by the incoming or flood tide, and that the increase of deposites is always in the line of the motion of the tidal current. Thus, if the tide moves to the north along any part of the coast, projecting points, which may serve as nuclei, are found to elongate in a north and south direction. This action is not confined to our coasts, but Lieut. Davis applies it to the explanation of phenomena noticed in the Llandes of France and Holland.

Another important deduction is, that the deposites at the mouth of the harbors and estuaries, (not rivers,) known by the name of bars, are formed from materials deposited by the ocean. The action of the tide is that of constant deposition. Degradation of the coast is the effect of the waves and storms of the ocean. The general action of the meteorological causes, is to diminish the height of continents and to transport their materials to the sea, while the action of the tide is just the reverse, and tends to keep up and preserve around the coast the materials which have been brought down in geological periods. In this way the belts or land which skirt our coast have been thrown up, and even Long Island itself has probably been formed in the same way.

Battin's Coal-Breaker.

The several suits brought against our Colliers some time ago, having resulted unfavorably to the Plaintiff, on the ground that his patent right was worthless—for that is the substance of Judge Kane's opinion—we had an idea that the matter was dropped altogether. But we find that Battin has since obtained from the Patent-office some change in the wording of his claim, upon which he thinks he can do something. He has therefore brought new suits against some parties. Having given patient investigation to the merits of this patent during the first trial, and having heard the views of the court, we feel well satisfied that no after-change in the mere words of the written document can prevail upon the bench to alter its strongly expressed opinion. The Patent-office cannot by any new instrument of writing, confer a right that the Plaintiff had not before the issue was made. In fact no right whatever attaches because of letters patent, which are, if we understand them, mere certificates of the opinion of the Commissioners.—[Pottsville Mining Register.]

[We understand that Mr. Battin's alledged invention consists merely in uniting two machines together—the breaker and screener.—The coals used to be broken in one machine and screened in the other, and Battin united them by a common arrangement. In this view of the case the remarks of the Register are perfectly just and correct.

North Carolina, it is said, is the only State in the Union that does not contain a medical college. This probably accounts for its being so healthy a State.

A bridge across one of the streets of Milwaukie, Wis., broke down recently, with thirty persons upon it, all of whom were thrown into the river. None were drowned.

The mummy is the strongest dead proof that "*self-preservation* is the first law of nature."

© 1850 SCIENTIFIC AMERICAN, INC

TO CORRESPONDENTS.

"R. M., of Va."—We have examined the drawings of your water wheel, and find that the principle is not new. The same devices are found in the rotary engine of Mr. Hale, patented sometime since, no patent could be obtained for it. We shall be exceedingly glad to hear of your success in the other matter, all improvements are viewed by us with a liberal eye, there are no standing offers in this country for inventions of any kind. We are not prepared to answer your other question as no drawings are furnished.

"E. B. P., of Tenn."—We have shown your letter to several machinery builders, none of whom would feel disposed to enter into any such arrangement as you propose.

"W P., of N. Y."—The papers will be forwarded direct to you from the office, they must await their turn. $1 received.

"G. S., of Ohio."—We do not know that Ranlett's Architect could be obtained in Cincinnati. Your order has been faithfully attended to.

"R. S. B., of Ohio."—The price of achromatic object glasses can be purchased here for $40, the price of the best is $75, warranted.—You can apply to John Roach, optician, Nassau st., N. Y.

"L. H. of Ohio."—There are so many different kinds of pumps now in use, that it would be difficult for us to make a selection, one of the best is illustrated in No. 27.

"W. L. H., of N. Y."—Ranlett's Architect can be sent by mail, but those notieed some time since cannot, as they are bound.

"X., of N. Y."—Your ideas are impractible, try again.

"W. K., of Texas."—It appears to us that your plan is new. You had better construct a model and forward us as soon as possible.—the stave machine we think costs $600.

"H. L. M., of Mich."—We have never seen an endless screw used, but we have seen a pinion employed to work into a central rack rail for the locomotive, to climb the incline. It is patented.

"T. S. J., of N. Y."—Your plan is novel, but the only safety lies in low pressure boats, &c. When do you hear of them exploding? never. The question would also be, "will your plan answer the purpose ?" We think not, you know how to burst a barrel of a gun. The spring we do not think patentable.

"E, W., of N. Y."—The effect cannot be produced unless the steam be heated entirely out of contact with water. The plan you speak of we have seen tried.

"R. W., of Ala."—We have just received yours.

"A. H., of N. H."—We now understand your sketch. We think it inferior to the "steelyard."

"A. C. L, of Mich."—Submerged wheels are in common use, and so are tidal wheels,—yours are somewhat different from those we have seen, but we have seen them with moveable buckets. They have been condemed for liability of getting out of order.

"H. B. S., of Vt."—You might avoid trouble by bringing the water in elevated spouts. We should adopt this plan even if it should cost more.

"M. E. J., of Mass."—The drawing and description of your invention has been examined. We think a patent could be obtained on some of the points claimed. You had better send us a model as soon as convenient.

"E. A. B., of Mass."—The Anglers Almanac is not published this year. We have given you credit for the money.

"H. W. L., of N. Y."—There are several patents on bedstead fastenings, this is all we can say about them until we know what yours is.

"J. H. W., of Ill."—We wrote you on the 22nd inst. in answer to your order of the 4th.

"E. S. G., of Md."—We are unable to give you the information sought for.

"J., of Kensington."—Your question is answered in the affirmative.

"N. W., of N. Y."—So far as we can understand the principle of your invention we think it cannot be new. We have seen the same before.

"E. C., of Conn."—Your statement was correct and the missing numbers have been sent. Mr. S's subscription expired with No. 19.

"S. H. M., of Va."—We do not keep the Miscellany for sale, by remitting the subscription price to the publisher he will send each number as issued.

"R. C. V., of N. Y."—We are wholly unadvised on the point refered to. You had better address Mr. M.

"J. S. W., of N. Y.—Railroad gates have been patented within the past year, of their utility we cannot speak.

"W. B. K., of Mass."—We do not think the point referred to by you could be patented, as it involves no mechanical novelty. We can however better decide that point as we proceed with the papers.

"A. W. P., of Ohio."—Parties are scarce here who will advance money on obtaining foreign patents. If we have an opportunity of recommending any one, we shall take pleasure in so doing.

"A. D. B., of Ala."—We cannot give you practical information upon the subject referred to, as we have never put one up. You had better consult some one older in the business than your self.

"J. H., of Ala."—Your subscription will not expire until No. 39 Vol. 6. The book ordered was sent on the 26th inst.

"J. M. T., of Ill."—We have examined closely the drawings of your invention, and find that it does not possess sufficient novelty to warrant an application. Machines for this purpose have been subject to numerous modifications, which fact you doubtless well understand, and your's seems to present no features of a patentable character.

"R. B., of N. Y."—Crawford, is the architect of the Washington Monument. The other information we cannot give.

"S. P., of N. Y."—Never let your water line be below your fire line, no safety otherwise.

"P. S. D., of Penn."—We have just received yours with the Stereolaic Cloth Patterns.

"C. R., of Vt."—We will shortly give an article on the subject.

"J. Van K., of Boston."—We think your old patent covers the principal field—the improvement, however, appears to be a good one.

"G. W. S., of N. Y."—We believe that a patent could not be secured for your mode of reducing the bark; for although the application may be new, the manner of accomplishing it is well known, and the arrangement of the saws is like the cotton gin. We will make the application if you desire, but it would be with doubts.

"E. C. J., of Mass."—You will please to send a model of your invention to this office. This will prevent any future misunderstanding.

"J. G. P., of R. I."—Your business is progressing, but we shall have to write you in regard to the printing.

"J. W. B., of Ct."—We cannot undertake your business, as it is not convenient for us to do so.

A. M., of Mass.—We do not wish to be umpire in testing the articles. If you wish to test them fully, Dr. Kent, of John street, New York, or Dr. Chilton, of Chamber street, will do so, as they are Analytical Chemists, by business. We will, however, publish the mode of testing.

"J. F. D., of Pa."—Your method of chilling is no doubt good, but not new. The same has been done before. Please let us know what numbers of vol. 4, you have.

"J. S. D., of N. H."—The model of your "Book Holder" has been examined, and although different from any thing we have seen, still we have doubts as to its real novelty or utility. It would appear to us that the demand for such an apparatus would be scarcely sufficient to warrant the expense of an application; besides, there is, in this city, an invention for similar purposes less complex, but very little used. Perhaps, however, this is not a proper market for them.

"J. R. C., of Oneida Lake."—Yours has just come to hand—see next week.

Mc. C. & N. of Mass.; B. B. & B. & R. of Mass.; U. W. of N. Y.; L. B. of Ala.; E. H. of Mass.; and W. T. C. of N. C.

Your specifications were duly received and have been forwarded to the Patent Office with drawings and models.

Money received on account of Patent Office business, since March 19, 1850:—

C. & D. of Mass., $30; D. H. J. of Pa., $30; L. B. of Ala., $20; L. S. C. of Ohio, $20; W. & P. of Pa., $15; B. B. of Mass., $60; H. P. of N. J., $48; A. O. of N. J., $10.

ADVERTISEMENTS.

Terms of Advertizing.

One square of 8 lines, 50 cents for each insertion.
" 12 lines, 75 cts., " "
" 16 lines, $1,00 " "

Advertisements must not exceed 16 lines, and cuts cannot be inserted in connection with them for any price.

A LIST OF VALUABLE SCIENTIFIC AND MECHANICAL BOOKS,

FOR SALE AT THE SCIENTIFIC AMERICAN OFFICE.

Ranlett's Architecture, 2 Vols., bound,	$12,00
Ewbank's Hydraulics and Mechanics,	2,50
Gilroy's Art of Weaving,	5,00
Gilroy's Art of Calico Printing,	5,00
"Scientific American," Vol 4, bound,	2,75
Minifie's Drawing Book,	3,00
American Steam Engine, Plate and Book of Description	3,00
Scribner's Mechanics, Tuck, Gilt,	1,25
Treatise on Marine and Naval Architecture,—published monthly, 12 Nos., each	,75
Leonard's Mechanical Principia,	1,50
Mahan's Civil Engineering,	3,00
Morfitt's Chemical Manipulations,	2,50
Instructions for Testing, Melting, and Assaying Gold	,25
Duggan's great work on the Stone, Iron, and Wood Bridges, Viaduets, &c., of the United State's Railroads. Published monthly in parts to be completed in 12 parts. Parts 1, 2 and 3 now ready, each	,75

N. B. This work is supplied to subscribers only.

THE GRAEFENBERG MANUAL OF HEALTH.—The Manual of Health just published by the Graefenberg Company, 7 parts, 300 pages, 12mo. This is the most useful and comprehensive, as well as the cheapest medical work extant, and should be in the hands of every family. Part 1st contains an account of the different medical theories of the present day, both good and bad, and their relation to the health of the community. Part 2d presents a new doctrine: The Americo-Graefenberg System, which need but be understood to command the confidence of the whole community. Part 3d describes the causes, symptoms and treatment of almost every form of disease, including those diseases peculiar to females and children, useful to all classes, even to physicians, as a hand-book. Part 4th contains important directions for preserving health, &c. Part 5th, Hints for Nurses, treatment of persons recovering from sickness, cookery for the sick, &c. Part 6th, Domestic remedies described, including mode of raising and preserving medicinal roots, &c., making lotions, poultices, colognes, cosmetics, &c. Part 7th contains a collection of useful tables, recipes, &c. For sale at the office of the Graefenberg Co., 50 Broadway, and by booksellers generally. Price 50 cents. Liberal discount to dealers.

NOTICE TO POSTMASTERS.—As it is the wish of the Company to distribute this work extensively, any Post Master forwarding $2 for four copies shall be entitled to one copy gratis. tf

MOSSELMAN ZINC.—The Vieille Montaigne Company supply their agents, M'Call and Strong, New York—with Roofing and Flooring in sheets 3 by 7 feet, from 11 to 22 ounces per square foot. Corrugated, 3 by 7 feet, 27 oz. for roofing public buildings. Ship Sheathing Metal. 14 by 48 inches, 22 to 30 oz. Perforated, of various sizes, for sieves, sifting metals, &c. Grey Zinc Paint, for preserving Iron and Wood work. Spelter, Wire, Nails, Imitation, Bronze, Statuary, &c. They warrant their metal free from any admixture of iron, or any brittle substance, and recommend it for the manufacture of articles exposed to the action of water, as it does not rust. Plans, specifications, models, and other information, may be had of their agents.
28 5t * Liege, Belgium, January 1850.

ASPHALTUM.—To Manufacturers of Iron Ware and Varnish Makers.—The subscribers being the principal holders and expecting to receive a large and continued supply of the real asphaltum, would call the attention of Varnish Makers, Japanners, Machinists, Manufacturer of Iron Ware, Steamboat Machinery, Agricultural and other Instruments, Shipholders, or others reqniring or using Black Paint, Black Varnish, or Japan, to the article as being of fine quality, very brilliant, and coming very much cheaper than any gum used in the manufacture of Varnish, Japan. or Paint.
Schieffelin Bros. & Co., 104 and 106 John-st.
28 4t *

THE UNIVERSAL COUNTERFEIT AND ALTERED BANK NOTE DETECTOR AT SIGHT —A little pamphlet containig "A System of Infalliable Detection applicable to any Bank in the United States, now in circulation or hereafter issued. Complete in Seven Rules with Diagram for self instruction." Arranged by H C. Foote. Price $2 including a magnifying glass: mailable. Address H. C. Foote, 763 Greenwich st., N. Y., or Messrs. Stringer & Townsend, corner Broadway and Ann street, or Messrs. Munn & Co., Office of the Scientific American. 28 1*

IMPORTANT INVENTION.—A new article of Machine Belting, made of a material never hitherto used for that purpose: 25 per cent. of power saved by its use. Its expense is 25 per cent. less than the patent stretched leather, or india rubber Belting. All sizes made and constantly kept on hand, from 1 inch in width to 30 inches.

CERTIFICATE.—J. McCarthy,—Having had several of your Flexible Cement Belts in use in our mill for the last 3 or 4 months, we cheerfully testify to their superiority, in many respects over any kind of belting we had hitherto used. ELIZUR CLARK, & Co.

Thi Belting is warranted to give satisfaction, or the money will be refunded. Manufactured only at Salina, Onondaga Co., N. Y. Orders are respectfully solicited. Address JOHN McCARTHY. 27 4*

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procuration of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms. Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.

Arrangements have been made with Messrs. Barlow and Payne, Patent Attornies, in London, for procuring Letters Patent in Great Britain and France, with great facility and dispatch.

MUNN & CO.,
128 Fultonstreet, New York.

WILEY'S PATENT BORING MACHINE.—For Boring Window Blinds.—The subscriber is now fully prepared to furnish this new and useful machine to those in want. For full particulers see Engraving and Description in No. 27, Vol. 4, this paper: or by addressing the subscriber (postpaid) any information can be obtained.
25 6* JOHN WILEY, South Reading, Mass.

MANUFACTURERS' SUPPLY STORE. The subscribers would call the attention of manufacturers generally, to his stock of articles for the use of factories, both cotton and wollen, consisting of every variety and kind used by them, which he can offer at as fair rates as any other establishment in this or any other market.

He has also constantly on hand a full assortment of Leather Belting, revetted, stretched, and cemented, of all sizes, made from the best material, and in the best manner, warranted equal, if not superior to any made in this country, and at prices which must be satisfactory to those wishing a superior article. He is also agent for the sale of Cotton and Woolen Machinery of the most improved kinds. Those favoring him with a call will be satisfied, both in regard to quality and price. P. A. LEONARD, 66 Beaver st.
23 3m*

SCRANTON & PARSHLY, New Haven, Conn. have just finished and will sell, to the first who will fork over the cash, 2 splendid side Lathes, 12 feet long, swings 25 in., weighs 2800 pounds, with back and screw gearing—centre follower, rest, drill chuck, and overhead reversing pullies—all complete, price $300. It is a rare chance for those in want of Lathes. Also, 7 of those 8 feet Lathes, a. $125, each. The fact that 5 of them have been sold within the last 10 days, is all that need be said. Send the money aud we will ship to your order. Other Lathes (large 2d lathe excepted) as heretofore advertised in this paper, for sale at low prices as usual. 22 tf

TO PAINTERS AND OTHERS.—American Anatomic Drier, Electro Chemical graining colors, Electro Negative gold size, and Chemical Oil Stove Polish. The Drier, improves in quality, by age—is adapted to all kinds of paints, and also to Printers' inks and colors. The above articles are compounded upon known chemical laws, and are submitted to the public without further comment. Manufactured and sold wholesale and retail at 114 John st., New York, and Flushing, L. I., N. Y., by
QUARTERMAN & SON,
Painters and Chemists
N. B.—The drier for printers' inks will effect a great saving, as the boiled oil, used by painters, will answer the purpose, without further preparation. 3m

BRITISH PATENTS.—Messrs. Robertson & Co., Patent Solicitors, (of which firm Mr. J. C. Robertson, the Editor of the Mechanics Magazine from its commencement in 1833, is principal partner,) undertake THE PROCURATION OF PATENTS, for England, Scotland, Ireland, and all other European Countries, and the transaction, generally, of all business relating to patents.

Instructions to Inventors can be had gratis, on application to Mr. THOMAS PROSSER, 28 Platt street, New York; as also the necessary forms of Petition and Declaration for British Patents.

PATENT OFFICE,
m1 tf 166 Fleet street, London.

MATTEAWAN MACHINE WORKS.—Locomotive Engines, of every size and pattern. Also tenders, wheels, axles, and other railroad machinery. Stationary engines, boilers, &c. Arranged for driving cotton,, woolen and other mill. Cotton and woolen machinery of every description, embodying all the modern improvements. Mill geering, from probably the most extensive assortment of patterns in this line, in any section of the country. Tools, turning lathes, slabbing, plaining, cutting and drilling machines. Together with all other tools required in machine shops. Apply at the Matteawan Co. Work, Fishkill Landing, N. Y., or at No. 66 Beaver st. New York City, to
24tf WILLIAM B. LEONARD, Agent.

LAP WELDED WROUGHT IRON Tubes, for Tubular Boilers, from 1 1-4 to 7 inches in diameter.—The only Tubes of the same quality and manufacture as those so extensively used in England, Scotland, France, and Germany, for Locomotive, Marine and other Steam Engine Boilers.
THOMAS PROSSER & SON, Patentees,
m1 28 Platt street, New York.

FOREIGN PATENTS.—PATENTS procured in GREAT BRITAIN and her colonies, also France, Belgium, Holland, &c., &c., with certainty and dispatch through special and responsible agents appointed, by, and connected only with this establishment.—Pamphlets containing a synopsis of Foreign Patent laws, and information can be had gratis on application
JOSEPH P. PIRSSON, Civil Engineer,
20tf Office 5 Wall street, New York.

MACHINERY.—S. C. HILLS, No. 43 Fulton Street, N. Y., dealer in Steam Engines, Boilers, Iron Planers, Lathes, Universal Chucks, Drills Kase's, Von Schmidt's, and other Pumps, Johnson's Shingle machines, Woodworth's, Daniel's and Law's Planing machines, Dick's Presses, Punches, and Shears; Morticing and Tennoning Machines, Belting, machinery oil; Beal's patent Cob and Corn Mills; Burr Mill, and Grindstones, Lead and Iron Pipe, &c. Letters to be noticed must be post paid. 26 6t

SASH AND BLIND MACHINE—Patented by Jesse Leavens, of Springfield, Mass., is the best Sash and Blind Machine now in use. The Machine cost $300 at the shop where they are made, near Springfield—extra charge for the right of using. The machine does all to a Window Sash and Blind except putting them together. Orders from abroad will be promptly attended to, by addressing JESSE LEAVENS, Palmer Depot, Mass. 22 20t*

BARLOW & PAYNE, Patent Agents and Consulting Engineers, 89 Chancery Lane London
m12 tf Patent Journal Office.

© 1850 SCIENTIFIC AMERICAN, INC

Scientific Museum.

For the Scientific American.

Tanning--Practical Remarks.

(Continued from page 216.)

It may be well, in this place, to remark that the process we are describing in this series of papers, is for HEMLOCK SOLE LEATHER, the great article of the trade, at the present time, in the United States. Upper leather and oak leather generally require different treatment in the early stages. The last run of the leeches is first used upon the leather, a certain number of vats are constructed for handlers. They are 5 feet wide 5½ deep and 8 feet long usually, with lines of logs, laid underneath to run off the exhausted liquor into the tail race. They should never lead into the junk, or through the junk, to prevent the possibility of the spent liquor being pumped on to the leeches; lest it should contain some of the jelly of the hide, as intimated in our last number. A three inch tube carefully fitted connects the vat and the log; a long plug, protected by an eye broad all in one corner of the vat, closes the tube. The seams in all the vats and leeches are thoroughly caulked with oakum, so as to be water tight. The handler vats are arranged in sections of 8 to 10 always leaving one not filled with sides. This vat should be run up two-thirds full of the last run before alluded to, by the night watch, to be ready for the morning business. The oldest pack in the section is called the head pack—these are raised by a yard hook, and spread into the new liquor of the vat along side, or when the handlers are full, are doubled and thrown up in a square pile, to drain until they are removed to the yard. The next pack in order is raised in the same manner, and by a double shift is spread into the new liquor. Each succeeding pack in the section is served in the same way, until the whole are brought forward, leaving two vats of the section without sides. Into the first of these, a pack of green stock from the beam house, is spread (70 to 90 in number,) care being taken that each side sinks before another is cast in, (as should be done with every pack), while the other is run off through the logs into the stream. It is well, if there is spare time, to stir this green pack, by lifting them with a pry at each corner alternately for an hour or two, but it is not indispensable.

The tan of the liquor is rapidly exhausted, and the residium becomes slightly acid in the last 3 or 4 vats of the section, so as to plump the sides to their natural state. The grain of the leather is raised smooth and fair, which is of great importance in finishing. The old method of handlers which is still practised by many tanners, is to color their green packs in new liquor for one day, raising them two or three times, and keeping them in sweet and stronger liquor through a section of four or six; but the grain is apt to be drawn, and the complexion some shades darker—the whole not so plump as by the new system.

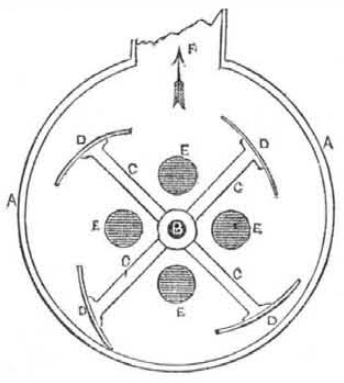
The character of the leather under the old method often depends upon the first day's management in the handlers, and no subsequent efforts can entirely remedy any neglect or carelessness here: it is not so liable under the new. The careful tanner will, however, strengthen up the handlers from the third to the seventh, during the warm months, if he works in at that time. Sweating is the first stage of putrefaction, and in a warm temperature rapid decay follows, unless the temperature is reduced. It must be arrested at the right moment, or the stock is damaged. Cold spring water, or an abundant supply of ice, should be at ready command for this purpose. This danger continues to the handlers: any heat in the liquor is very hazardous, in this stage: indeed, should never be allowed at any time when it is put upon the leather.

An ample supply of two inch plank, cut 8 inches longer than the width of the vat is always kept on hand, to make platforms on which to spread the packs, and temporary alleys over which to wheel them from the beam house to the handlers, and to the yard. The head packs are loaded upon wheelbarrows, by the yard hands, at any time their work will permit, and are removed to a platform laid over the vat alongside of the one they are to occupy, and are spread out at full length, the backs all lying one way—to be laid away, which we shall describe in our next.

History of Propellers and Steam Navigation.

[Continued from page 216.]

FIG. 30.



This is a mode of propelling invented in England, about 1829 or 1830, by a Mr. Hale. It was revived in 1847, by Simpson, and tried both on the Thames and the Clyde. An engraving of it appeared in the Illustrated London News in 1848, and although it was a little different from Mr. Hale's plan, the principle in no respect was changed—it was only a modification, (if it can be called that) of the blower substituted for the Paddle Wheel. It received high commendations, from some of the foreign periodicals, when employed by Simpson, and the boat to which it was applied with four feet paddle boxes, went at the rate of 11 miles per hour on the Thames. Its first performance seems to have been its last, for since that period, it has not, so far as we are informed, broken the waters of the classic "clutha," or muddy Thames.

Fig. 1, represents one modification of the apparatus, and consists of an air-tight circular casing A A, containing four arms C C C C, which revolve horizontally on a vertical axis B, placed eccentrically with respect to the casing; at the extremities of the arms are fixed 4 curved vanes or paddles D D D D, inclined in the manner represented in the drawing. The water enters the casing through the holes E E E E, and is expelled by the revolution of the paddles through the opening F, against the external water at the stern, which of course impels the vessel in a contrary direction.

FIG. 31.

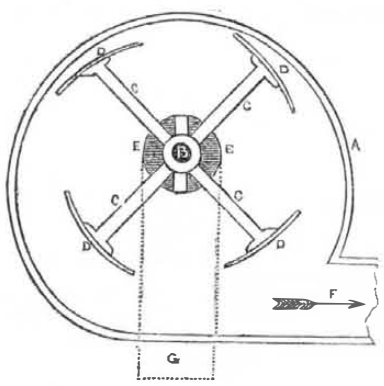


Fig. 2, is another modification of the apparatus. In this, similar letters of reference indicate similar parts, with only these differences in the arrangement, that the water is received at one large aperture in the centre of the vanes, the line of direction of the discharge being a tangent to the circle. The dotted lines at G denote a tube leading from the bottom of vessel through which the water ascends into the paddle-box; and it may be supposed, that similar tubes are employed in the first described plan, for conducting the water into the paddle-box.

The centrifugal force of the paddles acting on the water within the box, produces a pressure all round the interior of the box, which gives a tendency to move in a direction opposite to the side where the opening is made in the circumference; while the same causes accelerate the entrance of the water into the box, which is produced in the first instance by the paddle-box being placed within the vessel, and lower than the exterior water.

Oat Meal.

Experiance had long taught the Scotch that oats, such as they grew in their climate, are a most nutritious food; but the habits of the more influential English and the ridicule of a prejudiced lexicographer, were begining to make them ashamed of their national diet.—Chemistry has here stepped in, and by her analysis of both, has proved not only that the oat is richer in muscle forming matter than the grain of wheat, but that oatmeal is in all respects a better form of nourishment than the finest wheaten flour. But what is more, chemistry has brought us acquainted with the value of parts of the grain formely considered almost as waste. The husk or brain of wheat, for example, though given at times to pigs, to millers' horses, and other cattle, was usually thought to possess but little nutritive virtue in itself. Analysis, however, has shown it to be actually richer in muscular matter than the white interior of the grain. Thus the cause of its answering so well as food for cattle is explained; and it is shown that its use in bread (whole-meal bread) must be no less nutritive than economical. The true value of other kinds of food is also established by these inquiries. Cabbage is a crop which up to the present time, has not been a general favorite in this country, either in the stall or for the table, except during early spring and summer. In North Germany and Scandinavia, however, it appears to have been long esteemed, and various modes of storing it for winter use have been very generally practiced. But the cabbage is one of the plants which has been chemically examined, in consequence of the failure of the potato, with the view of introducing it into general use, and the result of the examination is both interesting and unexpected. When dried so as to bring it into a state in which it can be compared with other kinds of food (wheat, oats, beans, &c.) it is found to be richer in muscular matter than any other we grow. Wheat contains only about 12 per cent., and beans 25 per cent.; but dried cabbage contains from 30 to 40 per cent. of the so-called protein compounds. According to our present views, therefore, it is pre-eminently nourishing.—Hence, if it can but be made generally agreeable to the palate, andeasy of digestion, it is likely to prove the best and easiest cultivated substitute for the potato; and no doubt the Irish kolcannon (cabbage and potatoes beat together) derives part of its reputation from the great muscle-sustaining power of the cabbage—a property in which the potato is most deficient. Further, it is of interest—of national importance, we may say—that an acre of ordinary land will, according to the above result, produce a greater weight of this special kind of nourishment in the form of cabbage than in the form of any other crop. Thus twenty tons of cabbage—and good land will produce, in good hands forty tons of drum-head cabbage on an imperial acre—contain fifteen hundred lbs. of muscular matter; while twenty-five bushels of beans contain only four hundred pounds; as many of wheat only two hundred, twelve tons of potatoes only five hundred and fifty, and even thirty tons of turnips only a thousand pounds. The preference which some farmers have long given to this crop, as food for their stock and their milk cows, is accounted for by these facts; while of course they powerfully reccommended its more general cultivation as food for man.

A Question for Naturalists.

The Charleston Mercury thinks every sea-serpent story for the last fifty years may find its solution in the explanation given of the Beaufort sea-serpent last week. A number of persons testified that they saw its head and mouth and the humps upon its back, but it turned out that the serpent was four whales following each other in "Indian file." The Mercury says it is worth while to inquire whether whales do not instinctively follow a leader in this manner, when they become perplexed by the obstacles of a coast and the dangers of shoal water.

Mr. Stanley in his great speech, said that "England punishes any man who induces an artisan to leave her shores." Surely the school-master is abroad in Congress.

LITERARY NOTICES.

THE NEW YORK MERCANTILE UNION BUSINESS DIRECTORY.—Containing a map of New York city and State, and a business directory showing the name, location, and business of mercantile firms, manufacturing establishments, professional men, artists, corporations, moneyed and literary institutions, courts, public officers, and all the various miscellaneous departments which contribute to the business, wealth and prosperity of the state. So far as we are able to judge, we should think the enterprising publishers of this volume, had displayed much energy in collecting together so correctly, the great amount of matter here given. We find the work one of much value in our business, as it aids us in referring correspondents to the manufacturers of such articles as they often enquire for. This reminds us of calling upon our readers, to secure a copy of it without delay, as it will save them much trouble in ascertaining the residence of those with whom they may wish to deal. The work is particularly valuable to city merchants, as we suppose it frequently happens, that they wish to send on their business circulars,—for the small sum of two dollars they are posessed of every name, which might cost them otherwise to obtain ten times that amount. This work is published by S. French, and L. C. and H. L. Pratt, 293 Broadway, and is invaluable to every business man.

DRAMATIC WORKS OF SHAKESPEAR.—Boston illustrated edition, Phillips, Sampson & Co., publishers, Dewitt and Davenport, agents, N. Y. No. 12 contains the comedy of "All's Well that Ends Well," with a splendid steel engraving of "Helena." The letter press of this work is exceedingly well executed on the finest calendered paper. Two numbers are issued each month, and when complete, will contain about 40 fine steel engravings, forming the most elegant edition of Shakespear, ever issued from the American press.

SARTAIN'S MAGAZINE OF LITERATURE AND ART. The April number of this popular monthly has made its appearance, and is one of the best numbers that has been issued. Sartain for April, contains 27 original articles from the pens of a like number of contributors, and 12 fine engravings, some of which are very beautiful. Dewitt and Davenport, Agents, Tribune Buildings.

We are also indebted to Messrs. Dewitt and Davenport, Tribune Building, for the April number of Peterson's Ladies National, which, as usual, is filled with rich embellishments and choice literary matter.

HOLDEN'S DOLLAR MAGAZINE, N. H. Deitz, publisher, N. Y. The April number of this Magazine is filled with choice original matter and several illustrations. The work continues to increase in interest, and the publisher seems determined not to be outdone.

THE PHRENOLOGICAL JOURNAL—Published by Fowler and Wells, New York, is an excellent work, full of sensible and well written articles.

TYPOGRAPHICAL MISCELLANY—No. 3, by Joel Munsell, Albany. This is a monthly periodical which every printer should subsribe for, both on account of its merits, as a useful work, and for many other considerations beside.

TO INVENTORS AND MECHANICS.

FIFTH YEAR OF

The Best Mechanical Paper

IN THE WORLD!

A New Volume of the

SCIENTIFIC AMERICAN

is commenced about the 20th of Sept. each year, and is the best paper for Mechanics and inventors published in the world.

Each volume contains 416 pages of most valuable reading matter, and is illustrated with over

500 MECHANICAL ENGRAVINGS

of NEW INVENTIONS.

☞ The Scientific American is a Weekly Journal of Art, Science and Mechanics, having for its object the advancement of the INTERESTS OF MECHANICS, MANUFACTURERS and INVENTORS. Each number is illustrated with from five to TEN original ENGRAVINGS OF NEW MECHANICAL INVENTIONS, nearly all of the best inventions which are patented at Washington being illustrated in the Scientific American. It also contains a Weekly List of Patent Claims; notices of the progress of all Mechanical and Scientific Improvements; practical directions on the construction, management and use of all kinds of MACHINERY, TOOLS, &c. &c. This work is adapted to binding and the subscriber is possessed at the end of the year of a large volume of 416 pages illustrated with upwards of 500 mechanical engravings.

TERMS: Single subscription, $2 a year in advance; $1 for six months. Those who wish to subscribe have only to enclose the amount in a letter, directed to

A PRESENT!

To any person who will send us Three Subscribers, we will present a copy of the PATENT LAWS OF THE UNITED STATES, together with all the information relative to PATENT OFFICE BUSINESS, including full directions for taking out Patents, method of making the Specifications, Claims, Drawings, Models, buying, selling, and transferring Patent Rights, &c.

N. B.—Subscribers will bear in mind that we employ no Agents to travel on our account.

MUNN & CO.,

Publishers of the Scientific American, 128 Fulton street, New York. All Letters must be Post Paid.

Inducements for Clubbing.

5 copies for 6 months, $4 | 10 copies for 12 months, $15
5 " 12 " $8 | 20 " for 12 " $28

Southern and Western money taken at par for subscriptions. Post Office Stamps taken at their full value.

© 1850 SCIENTIFIC AMERICAN, INC